

COMPUTER WEEKLY

Vol. 27 No. 862
Thursday, July 19, 1979

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Published weekly on Thursdays
except on the first day of the month
except on Thursdays

IPC Business Press Ltd 1979.

CIRCULATION INQUIRIES
Registered Readership: 01-837
3650
Subscriptions: 0444 58188.

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Computer Weekly has a circulation each week of over 62,000 including the highest fully requested circulation in the UK. The International edition, which is published 10 times a year has a circulation of over 64,000.

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Computer Weekly is sent free of charge to the following categories in the USA and Canada only: Company directors, company secretaries, managers, senior executives, chief executives, senior managers, senior engineers, senior technicians, senior salesmen, senior programmers, senior operators, senior accountants, senior clerical staff.

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COMPUTERVIEW

A lesson not too late for the learning

FOR a slowly growing number of companies in the microcomputer business the hard realities of the market are being learned the hard way.

Take, for example, the situation that arose some three weeks ago between Eurapple, the European marketing arm of Apple Computers in Cupertino, California, Personal Computers, and Data Efficiency. Personal Computers was the company that, some 18 months ago, started operations by being the first to sell the then new Apple II microcomputer into the UK. Since that time there has been a steady growth in sales from around three systems a month to 100 a month. Now, the ground has all at once been literally whipped from under them by Eurapple, which has made Data Efficiency master distributor for Apple products in the UK.

Does this mean that Eurapple is a bunch of nasty ex-colonials bent on subverting British industry? The change in marketing outlet was sudden, that is certainly true; and it could easily be argued that Eurapple should have directly informed its existing distributors (which included Keen Computers and Lynx Computers as well as Personal Computers), rather than have it come out of the blue at them from Data Efficiency.

After all (and this is in no way meant to cast any shadow of doubt on Data Efficiency) all anyone had was their word for their appointment to begin with. But in the end it was not true that the Americans were nasty. Unsurprisingly, probably — not the British way — almost certainly, but for Americans it was just the way that they naturally operate. To go back into recent history or a while, some of the stages

that led up to the change in Apple distribution in the UK provide something of an object lesson in trans-Atlantic business dealing, and also in trans-Atlantic misunderstandings.

At least from the beginning of this year, Personal Computers had suffered from a poor supply of spare parts and the important PAL cards for the Apple, and this was the subject of several Telexes between the company and Eurapple. It was also hit hard by the Customs strike, which held up some shipments, but not others, so making sensible stock control almost impossible. This also compounded difficulties by loading often punitive warehousing charges on to the products because they could not be cleared through Customs. After five days, the going rate becomes £2 per kilo per day.

On top of this came the appointment of Keen Computers as a distributor by Eurapple. Keen had previously been a Personal Computers dealer, but the supply problems had prompted the change in

status. In a letter dated May 4, Andre Sossan, president of Eurapple wrote to Personal Computers managing director, Mike Sterland to clarify the position of Keen in the UK, saying that it was a distributor for the Midlands only, and that no further distributor appointments would be made in the UK. He hoped that this would give the clarification asked for.

On June 15, Sterland sent a Telex to Eurapple, complaining once again that the lack of PAL cards and spares was affecting his business opportunities — there were, for example, \$40,000 worth of Apples at Personal Computers that had been cannibalised to get spares for existing customers. Sterland went on to say that he was giving serious consideration to dropping his dealer network over a period, and might possibly take on another competing product line. This was taken by Eurapple as a non-acceptance of the clarification offered and that Personal Computers no longer wanted to distribute Apples.

The situation resolves down to one where Eurapple felt obliged to change its UK distributor set-up following what it viewed as a "hanging-on" by Personal Computers. In their terms this was not an unusual move. On the other hand, Personal Computers felt they only hinted that they might bail out if they did not get the increased support they felt they needed — a logical tactic to try and stir up some action.

Unfortunately in this particular game, Eurapple held all the aces.

The lesson for anybody looking at the microcomputer business is that it is fun, stimulating, demanding, maybe even chic. But at the same time it is a jungle where your financial jugular vein stands out a mile and everyone is a potential Dracula. When companies like Apple have corporate growth targets that are very close to 20% compound per month, no-one gets taken prisoner — it is shoot on sight.

Back in March, Dr Robert Clayton, chairman of GEC-Firechild, bemoaned the fact that UK education could not produce people with that mixture of entrepreneurialism, technical expertise and corporate management skill that had developed in the US.

In the microcomputer business, where it is all money-in-front, and credit is often only in exchange for the deeds of a house, all these attributes are needed with a vengeance. On top of this is the need to know the psychology of the supplier, and preferably (the best defence possible) what he thinks before he thinks it. For he will as sure, no one in this game is really going to have a genuinely friendly business relationship. At the end of the day it is only a business business relationship.

MARTIN BANKS

Ten years ago...

COMPUTER WEEKLY
JULY 17, 1969

IBM introduced its new mainframe language for the Minitel estimated that in 1971 there were over 7,000 computers in the UK, the Common Market planned an early link to processing and data transmission. The Japanese Trade and Industry Ministry delayed import of the country's first 6800 in case it put in Japan's own computer expected in 1971.

Redifon/CN merger

From front page turnover of £30 million let on which made a profit of £1.2 million, for the year it is forecasting a 18% net £1.4 million on a turnover of £35 million. Half the turnover, £16.2, was generated in France; but a substantial proportion of this was transferred to other companies in the group. CMC-Europe was formed from the US Corp. Machinery Corp in 1959, a consortium of Swedish Dutch financial interests; subsequently CMC-Europe was a subsidiary of the latter in a bid to obtain control of the company.

Redifon's agreement with the Dutch-regulated company for CMC-Europe was a 50-50 joint venture. Subsequent European disposal of the former parent company acquired by Perlec.

Behind closed doors

UNTIL now, the computer industry has happily remained free from the meddling hand of central controls, whether from regulatory bodies or government institutions. Free enterprise has flourished at all levels — even if the computing enterprise seldom comes free or even gift-wrapped.

It could be, however, that behind the DP scenes the industry is being manipulated by unknown groups. The suggestion that such pressure groups operate comes from David Butler, an influential UK consultant who is seeking to convince us all that "the prevailing opinion in the computer environment is formed by an amazingly small number of people, possibly as few as 20 or 30".

Unfortunately, Butler does not identify the participants of this seemingly reticent group, except to suggest that they operate from behind closed doors. However, specifically ruled out are such industry bodies as the NCC and CSA.

It will, we hope, take more than the opinion of one consultant to convince the industry that it is being manipulated. Power in the computing industry is more broadly based than on the opinion of the quoted 20 or so individuals. It rests firmly in the hands of those closely (and visibly) involved in the world of computers.

For a start, it is the decisions of DP managers which are responsible for shaping much of the DP action. It is the DPM's opinion which is taken on such matters as moving into teleprocessing, or whether to enhance or replace existing systems — and not that of some

anonymous body of opinion. The installation team likewise exercises a powerful role in the industry. The pace of technological change largely depends on the supply and competence of DP personnel. Closed doors are not encouraged, even if there was time to close them.

The company also plays an important part. It is, after all, supplying the money which supports the opinions of the DP management. Doors in this area are normally left wide open in order to monitor progress both inside and outside their in-house operation.

Power in DP is very much centred in the marketplace. It is here that opinions are formed. Whether it is in the shape of the mind-blowing sales drive from BASF or the keenness of the manufacturer's field engineering force, power and opinions are seldom far from the scene of action.

While governments and industry bodies discuss such momentous matters as computer privacy, microchip support and Prestel licensing laws, suppliers are busy promoting ever faster and more random disc sub-systems, communication devices and packaged software.

While IBM is challenging the world, it is itself fighting off the PCM might of such aggressive organisations as Storage Technology and Tel.

The industry has no need for closed door policies or manipulations. Advocates of a select group of policy-makers should try opening a few installation doors. They could well encounter a strange world — one where computer power-sharing is notably widespread.

1984 and all that...

THIS week's example of the strange things people say in the media about computers was sent in by Michael Coon, of Leasco, who wins £5.

In Washington DC, a cunning manipulator opened a bank account with a few thousand dollars and then appropriated a pile of pay-in slips for the convenience of customers. The next move was to use a magnetic "in-character recognition system" to print the number of his own account on them.

Sunday Telegraph

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Just a better computer. Fully IBM-compatible, and designed to give a lot more for a lot less.

The M80 is already used by major corporations such as Fairchild, Citizens Bank, Bankers National, Mitrol, Millers Insurance.

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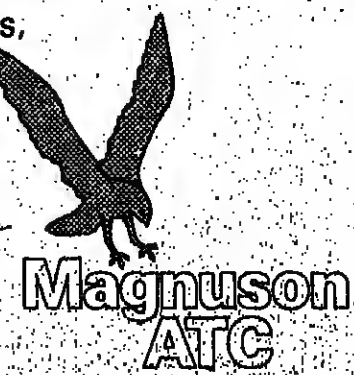
Substantially lower power consumption. Up to 50% less than any other computer of its size. (Take a look at your last electricity bill...)

The standard M80 system includes a central processor, control storage, channels, processor storage,

console display and keyboard. Naturally, there's a complete range of peripherals and the type of service you would expect from a major manufacturer.

It's worth looking at now. It could be yours in October.

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Downtime

by Chud

Having a lovely time, really...

TIME-SHARING, it seems, is no longer the prerogative of computer users; you can now "time-share" a building.

The scheme, floated by an Australian firm of property developers, allows you to buy a time-slice of a holiday home. The freehold of the property is yours, but only for a few weeks each year. The remaining time-slices are held by other users, who pay a proportionate fee. As in a computer system, you remain, with luck, unaware of their existence, and it's just like having the machine — sorry, the home — all to yourself.

We computer experts know, of course, that that's not real time-sharing. Real time-sharing, in a primitive way, is what hotels do. Everyone

books in at random, and the last man in hammers on the button trying to get into a full system.

Heaven helps if the holiday home men ever find out about modern time-sharing techniques. We'd keep getting relocated from room to room every time they wanted to slot a large party of Japanese tourists into a contiguous block of storage. To enable visitors to find us, the lift would have to be equipped with address translation software.

The crowning touch would come when they discovered virtual storage. Decent accommodation would then be reserved for active guests. Every time you went to sleep, you'd get swapped out to a shed at the back.



SIGN of the times — Astro, a hand-held calculator which reveals your horoscope. It accepts birth dates and returns a four-digit code that the manufacturer says includes the sun sign as well as the influence of three planets (Mercury, Venus and Mars) on your life. The machine can also compare two horoscopes — yours and a loved one's — to determine compatibility or conflict. Or you can always use the device as a four-function calculator. The Astro unit, which will cost about \$50 in the US, is made by Kosmos International, of Atlanta, who also sell biorhythm calculators.

Honeywell accent on soccer

MY roving sports correspondent tells me that soccer fever, sweeping the US, has reached Phoenix, Arizona, where staff at Honeywell's Information Systems Division have started up a league with no fewer than six teams. The stars come from Honeywell's factory in Scotland, where they played semi-professional football with Scottish clubs before they were transferred to Phoenix.

To give identity to the teams, the Honeywell people have made a rule that each side

must feature no more than two accents. They have a choice of English, Scottish, Spanish-American, Swedish, and US players, so there is plenty of choice there. (I presume they do not distinguish between George, Scouse, Cockney, etc.)

Still anathema for the Football League, women players are welcomed with open arms, as it were, at Honeywell, which is hardly surprising. After all, in California they play mixed Rugby.

One team is drawn from a local troop of Explorer Scouts which the company sponsors. This season their young legs fared particularly well at the start, but later on experience took over.

This autumn Honeywell is hoping to interest other computer and electronics firms in setting up an inter-company league. They have already played GTE and are wooing Digital, Motorola and others to put up teams.

Weetabix seeks buyer for bureau

WEETABIX, the breakfast cereal manufacturer, is seeking a buyer for its computer services subsidiary, Northamptonshire Computer Bureau, which is located at Burton Latimer near Kettering and operates on Univac 90/60.

Weetabix said that it would prefer a buyer already in the bureau business, and the company has prepared a prospectus detailing what its bureau has to offer. As well as the 90/60, the subsidiary will come with 35 staff and a large number of relatively small batch and remote batch clients. The bureau chalked up a turnover of £250,000 last year, but Weetabix would not discuss profitability.

About a third of the bureau's business used to be work for Weetabix itself, but the cereal company now runs its own Univac 90/60 in-house.

Computer Marketing in takeover

TERMINAL distributor Computer Marketing has moved further towards the systems market by buying Micro Software Systems, a 12-man software house started less than two years ago by four ex-Tops programmers, and by negotiating marketing rights to word processing software from a UK university.

Having started by writing applications software to order, MSS now has several standard packages including payroll, sales, and stock control in Basic for various micros, particularly the North Star Horizon and Alpha Micro systems, which Computer Marketing will now sell.

Gamma Group to set up software house

FOLLOWING the announcement that Systime is now actively marketing applications software for Digital Equipment computers (CW, July 13), the Gamma Group has said that it will very soon be launching a subsidiary company based in Manchester to develop applications software products for DEC PDP-11/70 machines and possibly for IBM computers.

The establishment of the new Manchester venture will follow closely on the shake-up within the Gamma Group in which three of the associate companies in which the group held a minority share bought themselves out.

The three associates were Gamma Computer Products, the related maintenance company,

GA 13, and Gamma Telecommunications Systems. GTS said that there was no connection between its decision to buy itself out of the group and the similar move by the other two firms, even though the deals took place within a few weeks of each other.

Another associate, Gamma Systems (London), will also be leaving the group very soon, it sells DEC Datasystems in the Greater London area. The former associates all plan to change their names.

The Gamma Group said that it was definitely not selling Gamma Business Machines, the subsidiary that it set up last year to exploit the market for IBM Series 1 based systems (CW, June 1, 1978).

Developed on North Star Horizon, the word processing package will be sold as an add-on to it. It will add about £2,000 to a £6,000 system.

They will join the range marketed as Comma Systems, which now spans prices from £6,000 to £30,000, supporting up to 32 users and available for rent or lease as well as outright sale.

The North Star Horizon is an 8-bit, Z80-based machine, while the Alpha Micro uses a 16-bit processor similar to the DEC LSI-11.

The LSI-11 itself is the processor used in the company's first small business system, the Comma VO3, which has won £500,000 worth of orders since its

launch last November — 15 of the systems destined for use as viewdata editing terminals and in-house viewdata services.

Both firms are based in Essex and are now moving into new offices in West Ham Road Industrial Park. Trading under both names for the time being, the combined organisation plans to drop both eventually, in favour of its brand name Comma Systems.

• The first order for the Alpha Micro based Comma VO3 system is worth nearly £20,000 and comes from a nearby New World Kitchens. It is due to be delivered in October and includes 128K of RAM, and megabytes of disc capacity.

TIM PALMER REPORTS ON DEVELOPMENTS IN PRESTEL

Problem of VAT on pages

A THORNY little problem over VAT and Prestel has arisen, and information providers and the Post Office are anxious for a speedy solution.

There is no argument that VAT is chargeable on access to Prestel, since it is a service. However, it seems equally clear that page charges, which are specifically for information, should be zero-rated for VAT, since they are of a kind with newspapers and books, which are zero-rated.

But the Department of Customs and Excise goes strictly by the book, applying the rule that VAT is chargeable on anything which has not specifically been assigned a zero-rating — and of course the "book" was drawn up long before Prestel was more than a gleam in the eye of a few imaginative Post Office people.

Some assiduous lobbying of MPs is therefore needed to get what is clearly an anomaly resolved in favour of the information providers. The issue goes beyond Prestel, because electronic information services of all kinds are likely to appear over the next five years.

Local access for most by 1980

A DRAMATIC expansion of the capacity and the geographic coverage of the Post Office's Prestel viewdata service is planned over the next 12 months, at the end of which the service should be in local call reach of 60% of UK telephone subscribers.

The Post Office plans, just published, also involve the launch of a full public service in London on September 11, and a change in the charging procedure, to take effect from the end of the month.

Immediately before the September 11 launch, the Post Office will implement a major change in the arrangement of the Prestel computers as a result of which, for the first time, information providers will update the database on GEC 4000 series computers at one centre, and the updated pages will be transmitted to other centres for public access. At present users access, and information providers update, a single physical database at Gresham Street, London.

After the switchover, information providers will update computers at a centre in Clerkenwell, and their updates will

be transferred automatically to public access computers at two new centres, in Wood Green, Essex, and at the Fleet Exchange in the City of London.

At the end of this month, the Post Office will change the system of charging users for Prestel accesses. Hitherto, the Corporation has levied a halfpenny charge for each page a user calls up, in addition to the standard charges for the phone call. Thus the minimum price for any page was 1/4p. (Most pages additionally carry a charge imposed by the information provider.)

In future the Post Office will charge simply for connect time to the Prestel computer — plus the phone call charges — so that the price on each page will go in full to the information provider. The new Post Office levy will be 3p per minute during business hours and a penny a minute for evenings and weekends.

In December additional London centres will be opened in Eltham and Ealing, and Prestel will move out of the capital with a centre in Birmingham.

Early next year, Prestel will begin to blossom, with additional computer centres in Edinburgh, Manchester and Croydon, and local concentrators in Nottingham, Glasgow, Liverpool, Luton, Reading, Sarnocks and Brighton.

At that point, almost 50% of telephone subscribers will be in reach of the service, and by the middle of the year this will increase to 60% with centres in Kingston, Leeds, Cardiff, Chelmsford and more in London, plus Datalink links to Newcastle, Bristol, Bournemouth and Norwich. The network will then have the capacity to support 70,000 business users and many more domestic subscribers.

Plessey plans autumn launch for 10 kilometre fibre optic system

PLESSEY, in partnership with cable maker BICC, now has a fully developed optical fibre transmission system for public telecommunications use. It is capable of carrying 120 multiplexed, pulse code modulated voice or data channels, with distances of around 10 kilometres between signal regenerators.

The main commercial launch is planned for Telecom 79 in Geneva in September, but a demonstration system is installed and working over a 14 kilometre route between Slough and Maidenhead, with one repeater 4 1/2 kilometres from Slough.

The Post Office is also about to place orders worth £1.5 million for 14 systems, to be installed in five routes between next year and 1982. They are part of 25m worth of orders to be shared out between the three main UK telecommunications suppliers, GEC, STC and Plessey.

The demonstration system and the first four Post Office routes use 8M bps transmission, suitable for 1 to 50 kilometre

distances in local and junction exchange circuits which Plessey believes will be the first big international market.

The company is developing systems for 34M bps and 140M bps transmission, which it says it can have ready when the need arises. They carry 480 and 1,920 channels respectively.

Although optical fibre transmission is still more expensive than copper, costs are falling fast and Plessey believes that within five years it will be taking between £7.5 and £10 million of a £40 to £50 million market.

Overseas holiday booking system

BCC Datasolve is developing a computerised booking administration system for Pontin, the overseas holiday club company. The system will in the first instance provide confirmation of bookings and produce invoices for the 70,000 tourists using Pontin each year.

HAMILTON

For sale or rent.

TERMINALS	PRICE	SALE	GRAPHICS DISPLAY TERMINALS	PRICE	SALE
DIGITAL			TEKTRONIX		
LA30 DECwriter IV	87	65	4010-1	100	150
LA30 DECwriter II	87	65	4010-2	100	150
LS120 DECwriter III	135	99	4010-3	100	150
LA120 DECwriter III	160	115	4013 ASCII/APL	457	347
LA110 DECwriter I	120	95	4014-1	760	571
VT100 DECwriter	86	61	4015-1 ASCII/APL	622	467
VT100 VDU	98	71	4016-1	131	945
VT110 VDU	116	85	4031 Hard Copy Unit	281	110
TEXAS			4602 X-Y Plotter	266	200
733 ASR	120	135	4603 Interactive Plotter	625	469
743 PSR	88	66	4604 Graphic Tablet	347	260
745 Portable Acoustic Coupler & EIA	120	99	4607 Custom Graphics Terminal	561	420
763 PSR 20K Bubble Memory	180	135	4601 Graphic Computing System	384	292
765 Portable 20K Bubble Memory	210	160			
810A Printer	145	118			
820 ASR	170	120			
HAZELTINE					
1400 VDU	50	38			
1500 VDU	72	51			
1510 VDU	80	58			
1520 VDU	90	70			
TECHTRAN					
950 Floppy Disc Unit	85	65			
951 Floppy Disc Unit	108	75			
9421 Dual Cassette	136	102			
915 Single Cassette	58	44			
MIDLETRON					
M22 Reader/Punch Unit	84	63			
DIABLO					
1620 Hylem	186	140			
1641 Hylem ASCII/IBM 2741	216	162			
LEAR SIEGLER					
AOM 3A VDU	54	40			
TELETYPE					
Model 43 Printer	95	72			
HEWLETT PACKARD					
2821A VDU	85	65			
2821P With Printer	148	112			
2835A	196	147			
2841 APL/ASCII	240	180			
2845A	208	158			
2847A	476	328			
2848A Graphics	320	240			

Auditor hits out at low control levels

A REMARKABLE attack on the "alarmingly low standard of inherent control" in many computer systems was made in London last week by Graeme Ward, president of the Institute of Internal Auditors.

The Institute was concerned, he said, about the low standard of computer auditing, both in the public and private sector. However, unlike many observers, it did not see computer fraud as the major problem.

"Far more significant is the fact that many organisations are using the wrong computers to process the wrong data in the wrong way."

It was vital he went on, that internal auditors came to terms with computers and improved their knowledge of business data processing.

It would be naive, he suggested, to expect them to become "expert software designers" but more tools and better computer systems were required to enable auditors to do their job, to evaluate the controls.

"Miniscule" research had been devoted to researching the needs of computer auditors and providing tools for them to work with. The Institute was convinced that the answer lay in the availability of flexible and powerful software, provided in the main by the hardware manufacturer.

"Pressure must be put, if necessary by auditors on their employers, certainly by purchasers on computer suppliers, to provide systems and software which are inherently controllable and which can be independently certified as being secure."

"The practice of many computer suppliers of selling hardware for which essential software has not been developed can only be described as irresponsible and the auditor has a role in ensuring that the same standards are applied as in any other contractual relationship," Ward concluded.

Alan Benjamin, the departing director-general of the CSA, said in reply that software was made for systems, not auditors. It was the customer's responsibility to order secure computer systems, but many would not spend the money required.

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OP SPOT

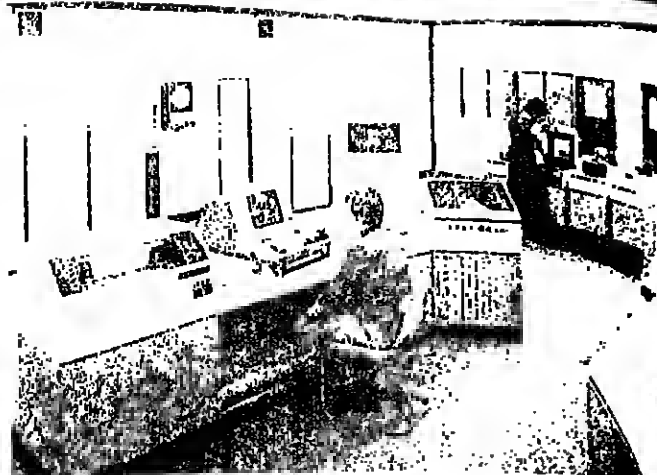
By Bernard Allen

Getting it right from scratch

THE beauty of building a new installation from scratch is that you have the chance to get the computer room just right — and as the picture on the left shows, Volvo's new High Wycombe centre was certainly started from scratch.

The dirty old workshop was turned into a sparkling new computer site (right) at a cost of £100,000 by Wright Air Conditioning (Birmingham), which also designed and installed the air conditioning system.

The computer room accommodates two ICL 2950s, which are handling work previously run at Volvo's site at Clich, Northamptonshire.



Phone loudspeakers for noisy rooms

IN last week's Op Spot we had a hint relating to the use of telephones with a volume adjustment facility as a means of helping the operator deal with calls in a noisy computer room.

And taking such aids a step further, the Post Office has introduced a small loudspeaker system to be coupled with the telephone. It enables the user to conduct conversations while moving about at a distance from the device.

Called Doric, it has a volume adjustment facility, eliminates low-level background noise and has a cut-out button so that the telephone can be used in the conventional manner if desired.

According to the Post Office, Doric is intended primarily for domestic use, but is also suitable for the computer room environment. It would, for example, allow the operator to tend a printer and talk to job control at the same time.

The rental charge for Doric is £14 a quarter.

Altering unit status with Vary

THE Vary command is used by the IBM OS operator to alter the status of units on the system configuration.

By means of this command tape and disc units, for example, are placed in an online or offline state. In the former, they may be allocated to jobs, while in the latter they may not.

A tape unit will, typically, be placed in an offline state so that it can be serviced by an engineer

or cleaned by one of the operators. The command to place tape unit 281 offline is:

V 281,Offline

In relation to systems consoles, the operator uses Vary to assign authority, and specify which of the various system message streams are to be routed to each device. For example, to give console 390 full authority with messages relating to the entire system

(system tasks, TP network, tapes, printers, etc), he enters:

V 380, Console, Roul = All, Auth = All

The parameter Auth = All enables the operator to use the console to start and stop procedures, hold and release jobs, and carry out many other functions. An alternative is Auth = IO, which will only allow him to enter commands relating to input/output functions.

Narrow-minded? — no, just standing up for themselves

THE action taken by the operators at the West Midlands Health Authority (CW, July 12) may seem a minor gesture when compared to the operations involvement in the current Post Office dispute.

In terms of persons taking part and the extent of their action, it is small — just 13 operators are involved and they are refusing to run some 16 special hack-pay jobs for WMA employees who have already had pay rises.

But, as pointed out in a recent Computerview, the effects of such actions are disproportionate to the number of operators involved.

At the time of writing, those affected already include the likes of West Midlands ambulances, hospital maintenance staff and blood transfusion operators. All await considerable sums of back pay.

In addition to this, the operators will refuse to run all new pay awards work if their pay rise has not come through by July 31. Non-operations, non-union persons may well agree with a report in a certain Midlands paper which described it all as a "You don't get your money until we get ours" dispute, implying that the operators are being narrow-minded and selfish.

As one with an operations background, I view the matter from a different angle, although I do sympathise with the unfortunate WMA staff hit by the action.

As we all know, operators in general are very much the poor relations of the computer industry, in terms of recognition, pay and career prospects. That being so, they often have to stand up for themselves.

It is unfair to label the WMA operators as "buddies." They are acting on behalf of and with the full backing of the local branch

of their union, the National Union of Public Employees.

It is interesting to note that the local NUPE branch is made up almost entirely of computer staff, including operators, programmers, data prep and data control staff.

The branch was formed about three years ago when the computer staff broke away from the

National Association for and National General Officers, the union to which most other WMA employees belong.

They left NAGN, they felt that the other members did not appreciate their problems and an uncommon experience.

HINT OF THE WEEK

Pause, not Assign on procedure libraries

PROCEDURE libraries and the use of override cards in DOS/VS environment are the subject of a hint by O'Reilly, chief operator at Astral Computer Services, the City of London.

O'Reilly advocates the use of procedure libraries to save job control staff from having to keep stacks of cards.

But, as he points out, problems can arise when the cards are mispunched and therefore fail to carry out function.

When that happens, the default files — those specified in the procedure's original Assign statements — will be used instead. This will cause serious problems, because the application has a four-week time cycle.

To avoid such occurrences, don't place Assign statements on the procedure library. Instead, put //Pause statements which will give control to the operator and inform him of the error.

This is the theory behind O'Reilly's hint. If the override Assign statements are punched correctly, they will replace the //Pause statements in the procedure and then run as normal.

If, however, the Assign statements are incorrectly punched, //Pause statements will still be in the procedure at the time (see Fig 1). They will cause the system to give control to the operator and instruct him what to do.

After this, the operator presses the end-of-block key, which will give control to the operator and inform him of the error. Figure 1: An example of a procedure which has //Pause statements, including messages informing the operator of the event of an error.

```
RIBAPRS VERSION 0.0 17 BLOCKS
PROCEDURE LIBRARY DATA%YES
MONTHLY PROOF SORT RIBA
//PAUSE *** OVERRIDE CARD IS MISSING ***
CONTACT CONTROL ***
//PAUSE *** OVERRIDE CARD IS MISSING ***
CONTACT CONTROL ***
ASSGN SYS003, '161'
//TLBL SORT TO UT, RIBA SORTED, 20
//TLBL SORTINI, RIBA VALID, 0
EXEC SORT
SORT FIELD(S), (1,8,11,12), SIZE%5000,
FILES%, WORK%1
RECORD TYPE%F, LENGTH%(36,36)
INPFIL BLKSIZE%2562
OUTFIL BLKSIZE%2562
OPTION PRINT%ALL
END
//
// RESET SYS001
// RESET SYS002
//
// JOB XRUN
// EXEC PROC = RIBAPRS.OV
// ASSGN SYS021, TAPE, VOL = TAPE01
// ASSGN SYS021, TAPE, VOL = TAPE02
// OVEND
//&
```

Figure 2: A job to execute procedure RIBAPRS statements will override the //Pause statements.

Operations management over the next five years is the theme of the first meeting, on October 17-18. Topics include future strategies for the operations manager, data protection and security in the 1980s.

If you've an interest in peripherals then don't miss PACE

The first PACE (Peripherals at the Centre Exhibition) being held at the Cunard International Hotel, Hammersmith on 11th, 12th and 13th September has been specifically tailored towards the interests of both OEM's and end users of computer peripherals. If therefore your main interest is in peripherals this new concept of exhibition organising will save you both time and money.

In one compact area will be assembled a worldwide cross-section of peripheral manufacturers' products covering the whole field including plotters, visual displays, units, printers, disc drives, graphics terminals, digitizers. In one day you will be able to see all the exhibits at leisure and at comfort without the distraction of extraneous products and

services because one of the tenets of the organisers is the restricting of participants in the exhibition to peripheral manufacturers and distributors. It will be easy for you to compare like with like; to obtain the latest information and to see up to the minute developments being demonstrated.

New Company chooses new exhibition

DRG Business Machines, a new acquisition for the Dickinson Robinson Group, divides its energies between small business systems and peripherals. On the peripheral side the company will be using PACE to display for the first time in the U.K. the V-1 Data range of discette drives and a new family of VDU from Beehive.

Mike Kilmer, Managing Director of DRG Business Machines, regards PACE as an opportunity to meet the OEM market and interest local distributors.

The arrival of his company in the U.K., when he learned about the exhibition at the NT in New York, recently, upon supply the OEM market with printers and printer mechanisms, punch and alpha-numeric liquid crystal displays.

Pete Tait, Marketing Vice President of TSPON America Inc, had no hesitation in choosing PACE as the best opportunity to announce

An Exhibition with a difference

An exhibition organised by exhibitors for exhibitors' specific needs sums up the thinking behind the organisation of PACE. For some time leading manufacturers and distributors of peripherals have felt that there is a need for an exhibition restricted to peripheral products.

Martin Boulton of E.W. Barney (Bristol) Ltd the man responsible for the organising of the exhibition on behalf of Pacewise Ltd has had the assistance of a small committee of leading members of the industry who have been responsible for vetting all applicants for space to ensure that (with the one exception of publishers of relevant trade journals), only peripheral manufacturers and distributors are accepted as exhibitors.

Because the organisers of PACE were anxious that this important section of the computer industry would have an exhibition of their own entirely dedicated to their interests, a novel way of involving the exhibitors was devised whereby each of the first 40 exhibitors received the bonus of one half share in Pacewise Ltd which entitles attendance at the A.U.M. and a share in the profits through the making of large

profits is very much secondary to the organisers' minds to ensuring the exhibition meets the exhibitors' needs of attracting only those visitors truly interested in peripherals. "Already, with still eight weeks to go 80% of the stand capacity has been sold," says Martin Boulton. "This surely points to the fact that we have identified a need and are meeting it successfully".

Admission is £5 at the door, but exhibitors and buyers of peripheral equipment can obtain complimentary tickets from Martin Boulton, E.W. Barney (Bristol) Ltd., Refuge Assurance House, Baldwin Street, Bristol BS1 1SL. Telephone: (0272) 211384/26984.



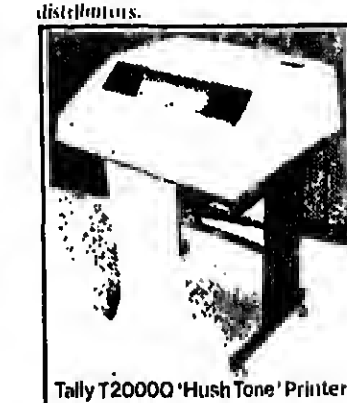
The following companies are exhibiting, or have products on show, at PACE:

Amplex	Learn Siegler
Amplex	Lynne Peripherals
Bealve	Lynwood Scientific
Bowsons	Megatek
Calcomp	MFE
Century Data	Mideltron
CMC	Newbury Laboratories
Data Design Techniques	Nicol Instruments
Data Systems Design	Penny & Giles
DSI	Pericon
Data Type Systems	Percept
Data Type Terminals	Plessey
DEC	Hamtek
Digit Data	Stannographies
Epson	Tally
Gannett	Tellex
General Audio and Data Communications	Teleprinter Equipment
Hazeltan	Teletype
Hypertron	Televideo
Imbec	Terminal Display Systems
Lambert	V-E Data

A new microprocessor based drafting system



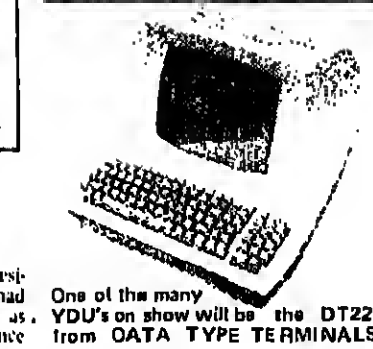
Local Display Systems Limited of Blackburn will be showing Summagraphics' Intergraph II-A flexible powerful microprocessor based interactive drafting system — an ideal low cost tool for use by electronic designers, architects, photographers, planners, in documentation, numerical control and data preparation. It is easy to learn, easy to use, powerful, efficient, accurate and cost effective and it will be on show at PACE.



Tally T20000 'Hush Tone' Printer

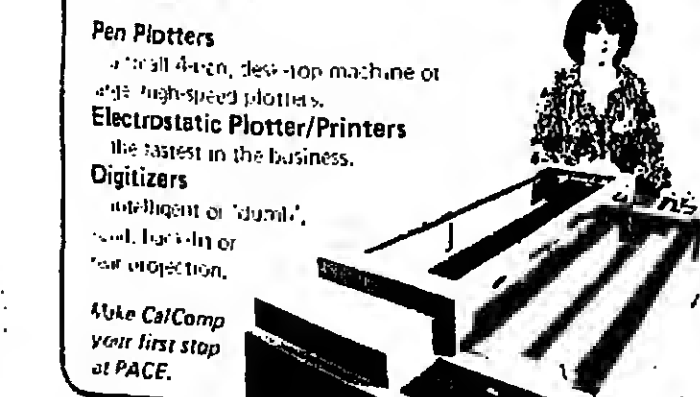
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Managers' seminars

INFOTECH Operations is breaking new ground with its international management forum (Op Spot, July 12).

Intended primarily for the operations manager, it comprises a series of seminars which will examine developments in technology and their effect on the operations function.

According to Infotech, the conferences or modules — all of which are to be held in London — will enable users to hear speakers who are experts in their own fields.

Operations management over the next five years is the theme of the first meeting, on October 17-18. Topics include future strategies for the operations manager, data protection and security in the 1980s.

If choosing Peripheral Hardware is your business you qualify for a free ticket to PACE — Peripherals at the Centre Exhibition. Write to: E.W. Barney (Bristol) Ltd., Refuge Assurance House, Baldwin Street, Bristol BS1 1SL. Telephone: (0272) 211384/26984.

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MICRO NEWS

Broadway opening

THIS is Mike Danney, one of the two founders of a new computer store set up to serve the West London area.

The company is Adda Computers and, based in the Broadway in Ealing, it will be dealing in Pet, Apple and Nascom hardware.

With his partner David Whitehead, Danney intends to provide a wide range of customer support services, including systems design, programming and hardware engineering services.



Two-way second sourcing

MOTOROLA and Rockwell International are currently negotiating a two-way second sourcing deal which will give each a domestic US alternative supplier.

Rockwell's Microelectronic

Devices division is expected to build Motorola's 68000, 16-bit processor, thus joining Hitachi as an alternative supplier, while Motorola will probably become the second source for Rockwell's 256K-bit bubble memory.

Rival to minis will follow AMD-Zilog collaboration

by Martin Banks

THE first fruits of the second source agreement between Advanced Micro Devices and Zilog for the Z8000, 16-bit microprocessor, should soon be seeing the light of day from AMD's Sunnyvale, California, factory.

AMD has made public the details of three peripheral control devices which, when connected in systems configurations with the Zilog processor, should give a processing capability that genuinely starts to rival that of minicomputer systems.

To allow full advantage to be taken of the processing power of the 16-bit device, the new peripheral circuits will employ a combination of complexity and

performance never needed for 8-bit processors.

An indication of this can be seen in one of the peripheral chips, a device called a burst error processor. This is more than capable of dealing with data transfer at the rates used by hard disc storage systems.

The other two devices, a video display controller and a direct memory access controller, will have the ability to fetch their own commands from memory in the same way as the CPU.

The burst error processor, like the other two devices, satisfies the main criterion for peripheral chips, that of unloading the CPU overheads wherever possible, so

that it is free for other work.

When a data block moves from buffer store to disc memory, the burst error processor adds hits to the end, in accordance with a polynomial calculation designed to detect and correct errors. The 24-pin device, which need not even be connected directly to the CPU, is designed to be part of a micro-programmed disc controller.

As well as monitoring the data blocks between the buffer and disc, it also monitors the data going into the buffer, and compares the two. If differences are found, the disc controller then inverts the incorrect bits, in memory.

With this device, block lengths of up to 1,000 bits are possible, and data rates can be as high as 20 Megabits per second.

Both the DMA and display controllers connect directly to the Z8000 bus. The DMA will be able to load its own control parameters, and will also give the option to chain DMA operations together automatically.

The display controller is still in design, and AMD is hoping to include several advanced features such as multiple screen windows with any number of cursors per window, and variable spacing with justified margins.

According to AMD, the burst

error processor should be available before the end of this year, the other devices following in 1980. As part of a second source agreement, it will also be manufactured by Zilog.

West Country store

A SHOP has been opened in West Country to sell TRS80 Apples, Altair, Tandy, Commodore hardware, computer software and other microcomputers.

The shop is in Salisbury, Wiltshire, and is run by a range of off-the-shelf hardware packages will be available to the expected clientele of business users, accountants and the like.

The company, which has been appointed European agent for the Lifebeat Association, software products. There, available in a wide variety of disc formats, and their nearly 50 programs in being covering most business applications from word processing to complete accounts side.

Music synthesis chip in production soon

THE programmable sound generator chip announced earlier this year by General Instruments Microelectronics, the AY-3-8910, promises much easier implementation of music and sound effects synthesis under microprocessor control, but it has suffered repeated delays.

One change of specification was made to improve yields, and at the same time the layout of internal registers was modified to enable pitch changes to be made with fewer instructions in some cases.

Sample quantities of earlier versions were circulated, but no

UK orders were generated. Quantity production is expected for next month and supplies will go to the games makers. In the US, the company is talking to manufacturers, and their orders of hundreds of thousands of devices are possible.

Distributors do not expect to be able to offer small quantities, for example to hobbyists, until later.

The device enables a range of polyphonic sounds to be generated with very few components, and much less error overhead than previous methods.

Surgery on Apple II first of a series

THE idea of surgeries for microcomputer hardware has proved popular enough for Micus, the specialist microcomputer group of the Institute of Data Processing Managers, to start planning for systems other than the Commodore Pet.

The first addition to the types of hardware to be "doctored" at the surgeries will be the Apple II, and the first session is scheduled for August 23 at the offices of Digilog, 68 Oxford Street, London, W1. The group is also planning

later surgeries on Tandy TRS80, the Cricor and the North Star among others.

In addition to a range of equipment and software, the Apple surgery will feature six users. The fee is available for questions and advice on applications.

Two of the main topics to be covered will be communications with bigger computers, and Pascal on the Apple system.

Forth for Tandy TRS

FORTH, the dictionary-organised language that has already been optimised to run on the RCA 1802 microprocessor, has now been adapted to run on the Tandy TRS 80 personal computer system.

This latest version of the language is called MMSForth, and comes on single diskette. Among the facilities it offers are enhanced keyboard command interpretation, and more sophisticated

and rapid string sorts. It comes with a full operating system, and with arrays and pointers built in. There is a possibility of a being able to run similar applications on the Tandy-supplied MMSForth, and to run faster than the original.

AI on a chip 'in two years time'

THE techniques of artificial intelligence will emerge from the laboratory and be sold commercially on a chip within two or three years, claims Edward Feigenbaum, of Stanford University, California. He thinks that a medical diagnostic program he has developed could be sold as an integral part of the spirometer equipment it works with, thus providing a practical application for a subject that has hitherto been regarded as theoreticians' dreaming.

Feigenbaum's program, named Puff, is an example of what is called an "expert system", containing in codified

form a set of about 100 rules supplied by a human expert, in this case a doctor. The computer is linked to a spirometer, which measures the strength and rate of a patient's breathing in order to detect pulmonary disorders.

Taking all the different measurements, together with information from the patient's record such as age, sex, and rate of smoking, the program goes through the rules acting as an "inference engine" to work out the logic, and comes up with a diagnosis, such as emphysema or bronchitis.

Puff is in regular use at the Pacific Medical Centre in San Francisco, where a doctor checks the machine's diagnosis each time, and he agrees with it between 90 and 100 per cent of the time. Feigenbaum thinks that the software could soon be incorporated in every spirometer sold, so that instead of getting data out the doctor gets a diagnosis. A complete system could sell for less than \$10,000.

Feigenbaum was speaking at the artificial intelligence summer school at Edinburgh last week, where he described the latest developments in expert systems in the US, mainly in the medical field. The most advanced, he said, was Intermist at the University of Pittsburgh which had grown out of the well-established Mycin, Stanford's consultative system for diagnosis and therapy recommendation for infectious diseases.

Evaluation of Plato

A 12-MONTH evaluation of Control Data's Plato system (CW, December 7, 1978) has been carried out by the Royal Navy at its School of Educational and Training Technology in Portsmouth.

Four Plato terminals were used in the study and the results are being analysed for later publication as an internal report. If the conclusions are favourable, orders for Plato systems could follow.

Meanwhile, in the US, CDC has revealed that over the last six years it has made a cumulative loss on Plato of \$38 million but that it will "break even" in the next three or four years.

Oxford Business School

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Most recently the Stanford workers have produced a program cautiously entitled AGE, an Attempt to Generalise, which enables users to construct an expert system for any given domain, simply by conversing with the PDP-10 via Teletype. It is being merged with Unit, a package which helps deal with one of the most difficult problems, that of how to represent the expert knowledge within the computer.

Discussing the future of AI, Feigenbaum bemoaned the penny-pinching on the part of both the US and the UK governments over funding for this field, particularly when compared with such areas as fusion research. "What could be more important than machines which think?" he said.

INDUSTRIAL NEWS ROUND-UP

PO workers likely to accept pay offer

A POST OFFICE pay offer put to members of the Civil and Public Servants Association last week will almost certainly be accepted by operators and clerical staff that has been a major factor in causing the telephone billing backlog of about £700 million.

With the strike now into its third month (CW, July 12), it looked as if a major revision in management thinking would be required, but this latest offer is the same as that accepted by the Post Office Engineering Union, and rejected by the Society of Civil and Public Servants.

It gives a straight pay increase of 9% with 7% for productivity, plus a further 2.25% in allowance for shifting the pay review date from April 1 to July 1.

The SCPS claims that it has created a considerable strike fund and so can continue its action until its claim of over 20% is met.

"I think the Post Office will have to write off at least £40 million by the end of this strike," said SCPS spokesman, "and it will probably be at least July, 1980, before the phone bill backlog can be cleared up."

Ban continues

THE overtime and weekend working ban by members of the Society of Civil and Public Servants, which is affecting, among others, the Customs and Excise

computer centre in Southend, continues.

A quick solution is prevented by the government's clamp-down on the public sector, which includes a freeze on promotion and recruitment plus cuts in department budgets (CW, July 12). A revision of these measures could be made next month, when the government's three-month innovationism is lifted.

Bank offer

AN abrupt end to all strike action by Midland Bank computer staff (CW, July 5) came about this week following an improved pay offer by the bank.

The offer, which will give an across-the-board rise of 15% plus 2.5% for productivity, and a lump sum of 2.5% at Christmas, was worked out through the mediation of the independent arbitration body ACAS.

2960 for Computer

COMPUTER of Bracknell, Berkshire, is to take delivery of its third ICL 2960 this week. Added to its 2875 this is expected to enable it to provide soon over £6 million worth of services a year. The new machine will operate under DME to cater for growth in demand from 1900 users, who are either considering conversion to 2960, or just coping with overload.



This college representing IBM computer and office equipment was presented to the company's Gillingham Street office in London last week by pupils of Woodberry Down Comprehensive School, Hackney.

IBM and the school set up a twinning arrangement in 1978 aimed at keeping IBM staff up-to-date with education trends and teachers in touch with business (CW, November 25, 1978).

IBM commissioned the college and paid £600 for it. The money will go into Woodberry Down's twinning fund for special projects.

IDPM aims for 10,000 members by 1981

A TARGET of 10,000 members by 1981 has been set by IDPM chairman Neville Taylor in his annual report to the members, to be presented at the Institute's annual meeting on July 26.

Taylor will tell the meeting that membership has passed the 5,000 mark and "few professional bodies can boast a comparable growth rate and fewer still a more active and healthy organisation."

His report goes on to say "The main achievement during the past 12 months has been the setting up and consolidation of our administration... The need to build upon the solid base has been achieved and we can progress... to speed up recruitment and increase branch activities."

When the IDPM was formed

from the merger of the Institute of Data Processing and the Data Processing Management Association, the executives of the two organisations were combined and this year all the offices are open.

The annual meeting is to be held in London on Thursday, July 26 at the Royal Horseguards Hotel, behind Charing Cross Station at 4.30 for 5.00 pm.

The Institute of Data Processing Management has signed a five-year contract with Stirling Professional Publications of Edgware Road, NW2 for a year book. The first edition, due in January, 1980, is limited to full members. Members who wish to be excluded or want listed under another address should write to the IDPM

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Over 10,000 turn out to see the latest in WP

A CHANCE to see the big word processing systems announced over the last year by several big computer manufacturers was the main significance of the annual International Word Processing Exhibition, held last week at Wembley. Otherwise the range of products on show from the specialist WP inkers was not substantially different from last year, and the reaction of many visitors was "more of the same".

There was no shortage of visitors, however: attendance at 10,011 was up 61% on last year, showing that interest among the general public is growing at a healthy rate.

In the absence of any revolutionary mainstream products there were plenty of gadgets on offer from the manufacturers for attachment to their machines, ranging from improved stackers that at last output pages in the right order; to sensors that find the edge of the paper on the platen; to mechanisms for adding to golfball typewriters to provide electrical signals for input to a WP system. The Wang xerographic printer which was to have been the main attraction of the firm's stand was not in the event shown, although it was at the Hannover Fair in April.

The offerings of the computer giants included the IBM 3730

from Data Processing Division, Big Blue's first attempt at producing a true shared-logic word processor; ICL's 7700 Information Processing System, a two-station unit; and the OIS 140 from Wang, a firm which is no newcomer to this side of WP. Digital Equipment was at the Fair for the first time under its own name, showing the WS 200 shared-logic system and the WS 78 stand-alone.

The 7700 from ICL can only have one or two screens, with the ubiquitous floppy discs and daisy-wheel printer, and with the two screens costs £17,500. Its intended goal is the tantalising one of being able to do both WP and DP, and as might be expected it consequently leaves much to be desired on the ergonomic side, which is of course of critical importance in WP. For instance, there are dozens of functions operated by pressing a control key followed by a letter, and even with the menus that can be called up to remind one of the codes this involves a formidable amount of learning. Manipulation of columns of figures can be done, but the operation is complicated.

The link to an ICL mainframe that can be set up does, however, provide many advantages for file storage and communications, and not least of all, report writing. It is still all too common



The Jacquard J800 dual-purpose word processing and data processing system, launched at the Wembley exhibition.

for typists to have to copy out pages of figures from computer printout, in order to provide a decent-looking report, and with the 7700 this retyping can be done automatically, an undoubted boon for all concerned. The trend towards getting raw typing input into WP systems from existing ordinary typewriters seemed to be gaining momentum. As an alternative to OCR, two firms have introduced or are working on attachments to go on IBM golfball typewriters to sense the depression of the keys and convert this information into binary code for transmission to a word processor.

Dataword's Swedish associate, Wordex, is developing such a device which senses the movement of the typewriter's keys optically, and which should cost around £1,000 for each machine modified. This provides an input station much

cheaper than a WP screen and keyboard.

BDP Word Processing has a similar device already available, which it calls Intype. In both cases, the modified typewriter can be used only for input, not output, as the printing mechanism is unchanged, unlike with the Dataword Transwriter which acts as a word processor on its own. Roll on the day when all typewriters are electronic and such mechanical modifications are unnecessary.

Transmission of documents from a word processor to a facsimile machine was demonstrated on the Logica stand using a fax receiver from Multhead, Logica's newly-acquired blood brother under the Nexos banner. Nexos itself had not stood at the Fair, but was in evidence in the form of glossy brochures displayed on Logica's tables, already carrying the Multhead and Nexos names together.

Also on the Logica stand was Microwriter Ltd, demonstrating Cy Endfield's hand-held word processor with its chord keyboard (CW, May 11, 1978). Additional facilities have been added to the Microwriter including a TV interface to provide a full-screen display to supplement the hand-held unit's single line, and a cassette recorder to give unlimited offline storage.

Big sales gained at the Fair

SEVERAL big sales were announced at the WP Fair. The largest WP order yet to be publicly announced in the UK was for six Wordplex 7 systems, valued at £200,000.

At the same time ICL's VTS has added another building society to its customer list. Following the Leeds Permanent (CW, July 12) is the Huddersfield and Bradford which is buying a single seven-station system.

ICL took its first order for a 7700 from Ipswich Borough Council.

Ipswich is installing a 2803 together with the 7700 to take over the work currently done centrally on the County Council's 1904S. The 7700 will work independently to start with, doing both WP and DP, but an integrated system will be developed with the 2803 over the next two years.

Logica attracts Newman from Palo Alto

DEVELOPMENT staff have been on the move around the WP companies. Logica VTS, contrary to reports that have appeared elsewhere, has made quite a coup in attracting William Newman, an Englishman who for some years has

Wang well placed to take share of a growing market

DEMAND for word processing systems has given Wang Laboratories a 63% increase in turnover to \$322 million in its financial year which ended in June 30. And net profits rose over 60% to about \$28 million.

Orders for all its products stand at \$180 million, more than twice the figure of a year ago, and that figure is all the more impressive because Wang says it normally ships products within 10 weeks of receiving an order. At this rate it will easily reach its target of a \$1,000 million turnover by the early 1980s.

"Our very high growth is due to our word processing business in the US," Fred Wang, vice-president of market planning and development and eldest son of the company's founder and president, told Computer Weekly at the Word Processing Exhibition. "But word processing is now growing fast in Europe and the Far East as well and next year it will get going in South America."

Wang is well placed to take advantage of most of these markets. It has subsidiaries in Belgium, where it has its European headquarters, the UK, France, West Germany, Denmark, Switzerland and Australia. It also has representatives in Africa and Eastern Europe.

About 40% of its business came from outside the US last year, with Europe accounting for about 25% of total business.

The Datapro research organisation named Wang as the No 1 word processing system supplier in the US in 1978. Fred Wang claims that worldwide the company is top in screen-based systems, with companies like Wydec, AES, Wordplex, IBM and Xerox among the other leaders.

Industry estimates of the size of the word processing market put it at between \$800 million and \$1,500 million.

The word processing market is not without its problems, however. "Support is becoming a very difficult area," said Fred Wang. "You're not just installing hardware — it's a complete systems approach. You have to re-think the way offices are run in some cases."

"We give a very high level of support compared with the computing side of our business: our people are only one step short of being management consultants. Support costs are

very high and are growing. "We do train users but we also got a do-it-yourself training package for customers who want to do their own training. I think this is the way the business will go."

Although growth of word processing business was the main reason for Wang's impressive results last year, word processing accounts for only 30% of its income. Between 5% and 10% comes from a bureau and the other 65% from its computer business.

The mainstay here is still the 2200 small computer, introduced some 10 years ago, which brought more income last year than any other product. But Wang's VS series of mainframes, announced last 1977, looks set to overtake the 2200 in sales. In 1977-78 VS sales were \$8 million. Last year they shot up to \$80 million. And next year Wang expects them to reach \$130 million.

The VS series is completely comparable with the IBM 434 with the recently announced VS-100 (CW, June 7) linking against the 4341.

"IBM offers a lot of memory than we do but our systems have greater capabilities and are a cheaper," said Wang. "The VS-100s have a big operating system overhead so we think systems offer a better performance ratio."

Wang has sold about 10 systems. It puts a strong emphasis on selling through agents, mostly software firms. Wang is not selling directly. IBM 4340s directly. Wang's reputation is in the small business system area with the VS series now building up from that.

"We have been selling systems to 2200-type computer. In the last year we have had more emphasis on smaller systems — the larger companies. We are getting into computers through individual departments which want a system for a particular application."

What about an even bigger system to put Wang's VS-100 among the big boys? "We research guys are now looking at the VS-100 prototypes and haven't any time yet to work bigger machines, but I'm thinking about it," Wang says.



ICL's venture into word processing, the two-station 7700 Information Processor.

been working at Xerox's prestigious research centre of Palo Alto, California. At PARC Newman was involved with the Alto office computer and the system based on it called Officetalk. At the same time Logica has lost Marco Capp, who is going to

Data Recall to work on the Mond system, together with David Ensor, formerly with Logica. Newman, who has been a former expatriate, has been working with Logica in Los Angeles.

DATA SYSTEMS NEWS

ISSUE NO 7

Major advance in data management

Vallance's on line

Perkin-Elmer steps into the centre of the commercial data processing arena with the introduction of a new COBOL-based transaction processing system for all Perkin-Elmer 32-bit Superminis, including the recently announced Model 3220.

New line printers

Perkin-Elmer announce two new line printers to meet the needs of medium throughput requirements. The LP300 and LP600, with nominal speeds of 300 and 600 lines per minute, are highly reliable, lower cost replacements for the comparable drum printers.

SOLID CHARACTERS

These new impact printers have solid horizontal character fonts, utilizing a continuous steel loop character band. Printing takes place when the contents of the 132 character buffer containing the data to be printed matches the rotating band. Groups of characters are printed simultaneously on the same line so quickly that it appears that the entire line is printed at once. Since the font moves in a horizontal direction, the possibility of vertical misregistration or characters that produce wavy lines is virtually eliminated.

MICROPROCESSOR LOGIC

The LP300 and LP600 use microprocessor logic to control the electrical and mechanical functions as well as providing internal diagnosis to detect and indicate to the operator printer misoperations and malfunctions. Mechanically there are only seven major assemblies in the entire printer, which will ensure high product reliability and reduce overall maintenance costs.

REPORT GENERATOR

Perkin-Elmer has also introduced RPG II, an easy-to-use, batch-oriented report generating facility for use with Reliance.

Reliance developed by UK team

Reflecting the growing international stature of UK software expertise, the new Reliance transaction processing system is a product of the company's Commercial Software Development Group at Slough.

This Group, under its Director, Dr. Martin Waters, is responsible for commercial software development for Perkin-Elmer Data Systems worldwide.

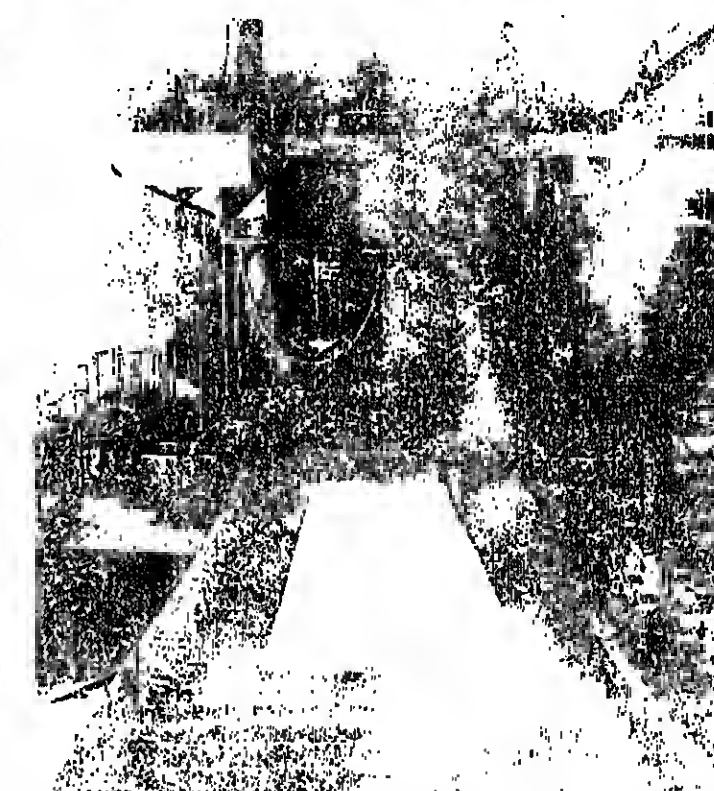
A complete software system for implementing transaction processing on Perkin-Elmer's 32-bit computers, Reliance comprises the Integrated Transaction Controller, Data Management System/32, and transaction screen forms and applications are programmed using ANSI standard COBOL, the user's data base being managed by DMS/32.

This high-performance data management features the industry's finest integrity facilities, including auto-



Dr. Martin Waters

matic transaction rollback, automatic record locking and unlocking and a highly efficient rollover technique for data base reconstruction. System-wide recovery and restart facilities ensure maximum



Computer aids productivity

The economics of data processing can be spectacular with certain industrial automation applications. This is especially true of the activities of Davy-Luwy Ltd, whose Systems Engineering Division design special control systems for the process and metal industries, particularly in connection with the rolling and forming of steel and aluminium.

INCREASED THROUGHPUT

Davy-Luwy's Vidiplan automatic shape control system, marketed by Lacey-Robinson of Bournemouth, uses a Perkin-Elmer microcomputer to achieve dramatic productivity improvements in the production of aluminium strips, with throughput increased in some cases by as much as 25%. Vidiplan controlled rolling mills are in operation in America, Austria, Belgium, the Netherlands and Norway.

Davy-Luwy chose Perkin-Elmer for two main reasons, according to Alan Foss, Engineering Manager Ltd, their microcomputers have a substantial price performance advantage over the competition. Secondly, since programs must be easy to maintain and very efficient, Perkin-Elmer's Assembler was found to be the best available against these criteria.

SMOOTHER PRODUCTION

The heart of the Vidiplan system is a device which continuously monitors sheet distortion during rolling. Signals are fed back to the microcomputer which automatically adjusts the rolling profile of the mill to correct any developing distortion. One of the unexpected advantages of this process has been a substantial speed increase in rolling. Compared with human control of mills, the computer provides more consistent operation and therefore smoother production.

With continuing improvements in performance and reduction in costs, Perkin-Elmer microcomputers will play a major part in the growing industrial automation market in the 1980s.

leads based electrical goods retailer Vallance and Davison, are developing a computerised accounting, warehousing and merchandising system based on a Perkin-Elmer 7/32 minicomputer.

Vallance's is a familiar sight in shopping centres in Yorkshire and the North Midlands. Dealing in electrical goods to the home, they run a chain of 24 shops and eight service centres, together with a thriving electrical contracting business spread throughout Yorkshire, Humberside, Teesside, Lancashire and Ayrshire.

Computational plans are extensive and are likely to take up to five years for full implementation. Following an evaluation by DP Manager, Mike Nutter, it was decided that the greatest immediate benefit would arise from improvements in stock control.

FIRST STAGE

This, therefore, is the first stage of what will be a fully integrated system running on the Perkin-Elmer 7/32 minicomputer, TV rental and HP accounting, logistics, payroll, vehicle costing and other financial management information from the continuing side of the business will also be integrated.

POINT-OF-SALE

In addition to 280 point-of-sale terminals at the 24 retail branches, Perkin-Elmer video terminals are installed in the central warehouse, linked directly to the computer. Using a system of stock numbers available by bar light codes, goods will be tracked from initial

delivery to the warehouse through distribution to the branches to eventual sale.

As well as detailed tracking of stock, information is distributed through an integrated system to the stock files, purchase and general ledger to give the benefits of an 'on-line' order entry system. This makes for easier production of merchandising analyses and demand projection as an aid to warehouse space planning.

Netherlands subsidiary launched

A new stage in the recent rapid expansion throughout Europe of the Computer Systems Division of Perkin-Elmer, is marked by the opening of a new Netherlands subsidiary.

The location of Perkin-Elmer Data Systems BV is the outcome of a 12-month market evaluation during which some 40 computer systems have been installed. The existing computer premises of Mommy Products Division have been expanded to accommodate the new computer systems Division subsidiary.

A new Netherlands Sales Manager, Rob Thangström, has been appointed and recruitment of sales support and engineering personnel is underway.

Address of the new operation is Perkin-Elmer Data Systems BV, Gebroeders 70, Schiphol 1105 ST, Holland. Telephone 20-450791.

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INTRODUCTION TO PASCAL

Structure—and how to use it

Part 4

SO far in this series, we have looked at the origins of Pascal, its novel data structuring facilities and the "nitty-gritty" of its grammar. It is now time to see how to write a Pascal program.

Define the problem

No matter what the language, the first task is to define and understand the problem. Complex problems benefit from special specification tools, but our Flexitime system is simple enough to be defined in English.

Employees in the firm of Blaze Inc can arrive and depart as they please while the gate is open, provided they take one and only one lunch break of at least half an hour. As yet there is no "Core Time" during which all employees must be in the building because the enlightened managers of Blaze consider this an unnecessary restriction. However the clock-on and clock-off times of all employees are monitored and periodically analysed. If it turns out that working patterns are becoming too diverse, Core Time might be instated. In the future, the working record of each employee might be filed, but at present the data is collected for statistical purposes only. Blaze wishes this to be done on a computer.

Attempting a solution

At the simplest level, we need a program to read in clocking times, discard any which have errors or inconsistencies, and add the rest to a Statistics file. This system is shown in Figure 1.

We decide that times will be read into the computer every week, so we can envisage a stage when a Weekly file will be created as well. This would be sorted and used to update the proposed Work Records file. Finally, an Analyser program will be written by Blaze's statistics section to provide the board with some idea of the working patterns of its employees.

The next few parts of the series will be devoted to developing the time checker program, introducing most of the features of Pascal in the process.

The structure of a program

A Pascal program can have several sections as shown in Figure 2. The program heading is usually no more than a line long and includes the names of any files used by the program. Typically, these are the standard files input and output which are attached to the card reader (or equivalent) and the line printer, respectively. Time Checker has one other file at the moment so the heading is:

PROGRAM timechecker (input, output, statistics);

The next four sections are concerned with declarations, setting

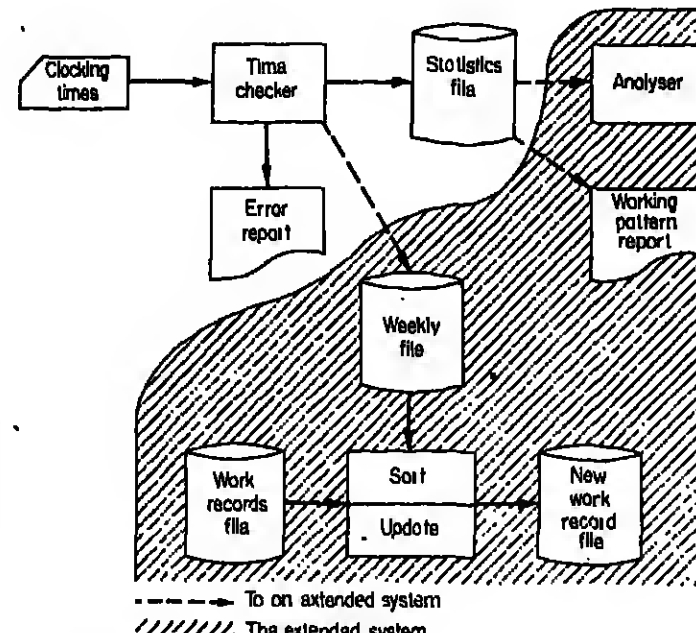


Figure 1. System chart for Flexitime.

up the program's dictionary. Like any other dictionary, this one includes information about "parts of speech" or, in Pascal's terminology, whether a word is a constant, a type, a variable or a procedure. These declarations must come in this order and the keywords CONST, TYPE and VAR appear only once, to introduce each of the words of that kind. PROCEDURE and FUNCTION precede each subprogram thus defined.

After all the declarations, come the statements which start with BEGIN and close with END. And now for the interesting part. Each procedure has exactly the same structure as a program. It has a heading (which starts with the word PROCEDURE rather than PROGRAM); it has declarations, including other procedures and functions; and it has a BEGIN-END pair enclosing its own statements. The implications of this will become evident as our Flexitime system develops.

The inconstant constant

Every programmer must have come across a program (certainly not his own) which requires a major update because some constant which occurred throughout the program had changed. For example, suppose Blaze Inc. decided to reduce the compulsory lunchtime to 25 minutes. If the original 30 appeared as such in the program, each occurrence would have to be changed. Moreover, an Editor command such as "change all 30s to 25s" would cause chaos by changing all other 30s (days in the month of June, for instance) as well.

In languages such as Fortran one is wary of assigning a name to a constant because this in fact sets up a variable and

IF(MIN2-MINI LE LUNCH)GOTO RUSHD

would, on most compilers, not be as efficient as

IF(MIN2-MINI LE 30)GOTO RUSHD.

A Pascal constant definition assigns a name to a constant for the purposes of documentation, readability and ease of change, but to the compiler, it is still a number of character or whatever.

SECTION	EXAMPLE
1. Heading	PROGRAM timechecker (input, output, statistics);
2. Constants	CONST lunchtime = 30; (* mins *)
3. Types	TYPE hours = 0..23.
4. Variables	VAR hoursworked : hours
5. Procedures / functions	PROCEDURE settimetozero; FUNCTION hoursbetween (t1,t2 : time) : hours;
6. Statements	BEGIN hoursworked := 0; settimetozero; END.

Figure 2. Parts of a Pascal program.

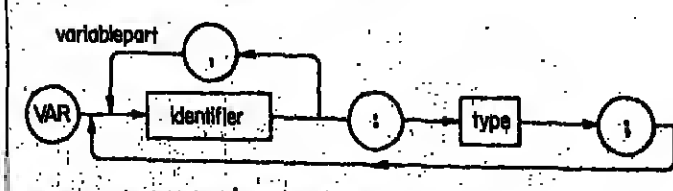
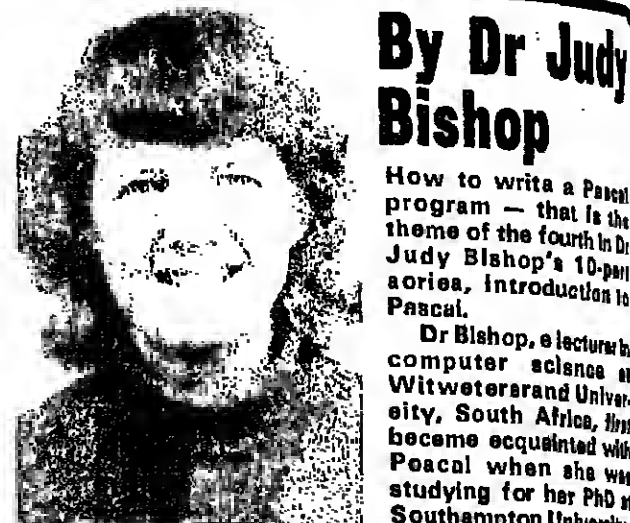


Figure 3. Syntax diagram for variable declarations.



By Dr Judy Bishop

How to write a Pascal program — that is the theme of the fourth in Dr Judy Bishop's 10-part series, Introduction to Pascal.

Dr Bishop, election to computer science at Witwatersrand University, South Africa, first became acquainted with Pascal when she was studying for her PhD at Southampton University.

Thus, to implement the new lunchtime policy would require altering of one line only in

CONST lunchtime = 25;

A useful definition in any program, and one that will be used, the Time Checker is

CONST space = ' ';

Variables and types

Types were covered fairly fully in Part 2. The concept of a variable containing the information that a program manipulates is generally well-understood. Therefore this is a good opportunity to clarify the distinction between variables and types by introducing syntax diagrams.

Syntax diagrams are a pictorial equivalent of Backus-Naur notation for specifying grammars. Figure 3 shows one for variable declaration section of a program. The diagram is interpreted from left to right as follows. The word VAR, followed by an identifier (that is, a word or name). This can be followed by a colon, a type and a semicolon, for example:

VAR week : 1..52;

Alternatively, trailing the upper loop a few times, we can use a list of names before giving the type, for example

VAR firstletter, initial, ch, terminator: char;

After such a list the lower loop can be followed by the declaration of another variable (or group of variables). Note, however, that this loop joins the main line after the VAR, implying that it cannot be repeated.

What is "type" in this diagram? It is the name of a diagram listing all the possibilities for types. These include subranges, records and so on, as well as the name of a type the above declaration for week could also have been done as

TYPE weekrange = 1..52;

VAR week : weekrange;

The advantages of defining type names are the same as for defining constant names: readability, documentation and maintenance.

At last — Statements!

The statements form that part which is generally regarded as the "program". The fact that nearly four parts of this series have been completed before they are mentioned reflects the emphasis on data structuring as an integral part of the design of any system. While one cannot go as far as to agree with saying, "Look after the data and the program will look after itself," the foundation of an algorithm can only be made after effort has been expended on data structuring. By now, it is probably beginning to realise that this effort is not much more certain of success given a clear and powerful notation such as those provided by Pascal.

NEXT WEEK:

Part 5: Top down to the main program

What's New in Input and Output?

"Data Capture and Distribution" Friday September 21st at The Mount Royal Hotel Bryanston Street, Marble Arch, London W1A 4UR. Time change, an 11am start, all methods available now. Very few have been from the old style punch room. The NCC seminar will explore the current developments and how computer users can improve their throughput with these new techniques such as voice input and response, COBOL and CMB, and light pens. Delegates will receive a copy of the NCC Talking Points "Capturing Data".

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INTERNATIONAL BRIEFING

ICL wins £1m oil order

ICL has won a £1 million order to supply two ICL 2804 computers to the Nigerian National Petroleum Corp. The tender for the computers was issued by the Japanese Chiyoda Company, the prime contractor for Nigeria's new Kaduna refinery where one of the 2804s will be installed. Chiyoda considered two Japanese computer suppliers before choosing ICL.

Into PABX market

THE long-delayed entry of IBM into the US computer-controlled internal telephone exchange market is now forecast for the early 1980s, possibly by 1981 by which time the venerable European-built 3750 will be due for replacement. According to market researchers International Resource Development, the PABX market is booming in the US, with customers prepared to pay \$1,200 a line.

Japanese orders

OUTSTANDING success in Japan for the large-scale Univac 1100 line continues with three new orders totalling \$7.3 million. The Daihatsu Motor Company of Osaka wants an 1100/80; household equipment manufacturer and distributor Koizumi Sangyo Co, also of Osaka, wants an 1100/11, and Kao Soap of Tokyo is putting in an 1100/21.

Chess moves

A HONEYWELL Level 66/601 mainframe at CII-HB's Belfort factory has been kept busy over the past fortnight by the third World Chess Championship for under-17s. Forty-four players from 43 countries have been taking part in the intellectual match in Belfort and the computer has been working out the pairings for each round of the tournament, a task which, done manually, takes six hours.

Swiss Bank boost

A DRAMATIC increase in computing power is planned by the Société de Banque Suisse, the Swiss Bank Corporation, which is replacing its existing Burroughs B3700 systems with six B4400s and one B3830. The systems act as front end to an IBM mainframe and support a network of 1,500 Burroughs terminals.

Arab centre

THE Medical Centre, a private hospital in Jeddah, Saudi Arabia, has installed a Digicom M18E minicomputer with seven terminals to handle a centralised patient record, accounts and billing system. Terminals have been installed on each floor for reservations and accounts, in reception and in the laboratory.

COMPUTER WEEKLY International

NUMBER 95

THURSDAY, JULY 19, 1979

Siemens to manufacture in South Africa

THE German company Siemens is to become the first multinational organisation to manufacture computer products in South Africa.

The company is to make its 6.610 Intelligent terminal system at either its factory in Pretoria or its subsidiary in Johannesburg, South African Technological Products.

The only other non-South African company which could make computer products there is ICL, which is negotiating with the South African government on the possibility of building small computers (CW, June 7).

Initial orders for the Siemens 6.610 already exceed 100 and Siemens plans to produce 200

a year. Annual demand for this type of terminal system in South Africa is estimated at around 2,000 units worth £12 million. Five South African companies also make intelligent terminals.

The 6.610 can have up to 48K bytes of memory and support seven screens.

Intel offers most powerful commercial mainframe

THE most powerful general purpose mainframe computer in the world is now on offer from Intel.

Called the AS/8-7034, it is equivalent to a single processor Hitachi M-200H and Hitachi benchmarks indicate that it has a processing speed of 8 mips, million instructions per second, which compares with 4.7 mips for an IBM 3033, and is a little more powerful than an Attached Processor 3033.

It uses 550-gate ECL logic chips which Intel says are five times as dense, and at four picoseconds switch a little faster than those used by Am901 on its largest machines.

Contrary to popular belief, it appears that Intel was intimately involved with Hitachi in the development of the AS/8 and the M-200H, and has had engineers working at Hitachi's Kanagawa plant in the foothills of Mount Fuji for three-and-a-half years.

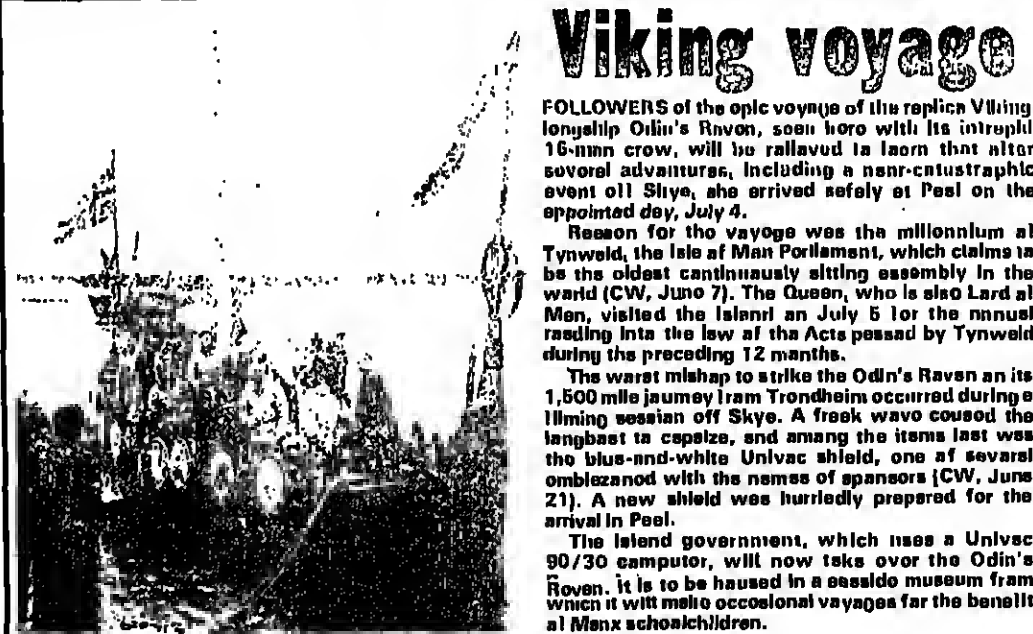
Intel has only announced a single-processor AS/8 but the underlying architecture of the machine is a true multiprocessor like the Univac 1100, Honeywell Level 66 and Burroughs B08-7800 lines, and unlike IBM's 370 and 303X machines.

It can come with up to four CPUs, and Intel expects that similar architecture will be adopted by IBM in the forthcoming top-end H-series. A further feature of the M-200H, not included in the AS/8, is an integrated array processor.

Particularly attractive to users who have not already installed plumbing is that, like all the Andoh machines, and unlike the 3033, the AS/8 is air-cooled.

The complexity of large systems and the shortage of highly-skilled engineers makes remote diagnostics a must, and Intel is planning to open a centre in Palo Alto, California, initially to serve the US customer base, to which all AS/8s will be connected. First shipments are scheduled for 12 months' time, and Intel expects that IBM will then have announced the H-series. It therefore has not yet priced the system.

Intel has also announced a significant enhancement for the AS/8-7032 Attached Processor system (CW, March 15) and renamed it the AS-7-7033 dual processor complex. The key new feature is that if the master processor goes down, users can manually switch the input/output channels over on to the second processor, perform an initial program load and continue working while the failed



Viking voyage

FOLLOWERS of the epic voyage of the replica Viking longship Odin's Raven, soon here with its intrapath 16-mm crew, will be relieved to learn that after several adventures, including a near-catastrophic event off Slipe, she arrived safely at Peel on the appointed day, July 4.

Reason for the voyage was the millennium at Tynwald, the Isle of Man Parliament, which claims to be the oldest continuously sitting assembly in the world (CW, June 7). The Queen, who is also Lord of Man, visited the island on July 5 for the annual reading into the law of the Acts passed by Tynwald during the preceding 12 months.

The worst mishap to strike the Odin's Raven on its 1,500-mile journey from Tromsø in Norway was the timing of the arrival off Slipe. A freak wave caused the longest in cables, and among the items lost was the blue-and-white Univac shield, one of several emblazoned with the names of sponsors (CW, June 21). A new shield was hurriedly prepared for the arrival in Peel.

The Island government, which has a Univac 90/20 computer, will now take over the Odin's Raven. It is to be housed in a seaside museum from which it will make occasional voyages for the benefit of Manx schoolchildren.

● Turn to page 24

Norsk to take over Tandberg

THE futures of two troubled Scandinavian companies, Tandberg of Norway, and Regnecentralen of Denmark, have been secured.

Norsk Data, manufacturer of high performance minicomputers, is paying £1.2 million for most of the shares in what remains of Tandberg. The rest of the shares are being taken by the Norwegian government, and the agreement calls for Norsk Data to buy these after a minimum of 18 months.

The move marks a diversification for Norsk Data, since Siemens has already acquired the computer terminals and peripherals manufacturing division, while the radio and television operations have been closed down and the UK TV factory has been bought by Mitsubishi.

Principal product of the operations acquired by Norsk Data is language laboratories — which Norsk Data really wanted. However, several other products, including high-performance audio equipment, are included in the acquisition, which currently employs 410 people.

Tandberg will be run as a sister company to Norsk Data rather than merged with it. Despite the minority government holding in Tandberg, Norsk Data is determined to retain complete commercial independence and avoid any Norwegian government involvement in its computer business.

Meanwhile in Denmark, a major financial restructuring is likely to take place at Regnecentralen, the national manufacturer of small mainframes and distributed processing systems.

IBM French profits down

IBM subsidiaries in France and Germany recorded figures for 1978 which were decidedly out of line with what one expects from the computer giant. A few weeks ago, IBM Deutschland reported profits up 8% at DM 1,697 million on turnover down just over 1% at DM 6,318 million. Now IBM France has reported a

drop in profits on increased turnover. Turnover rose about 12% to 11,075 million francs, but profits fell 2.9% to 765 million francs. Managing director Jacques Lemonnier attributed the fall in profits to growing costs in France, which put the company there at a disadvantage to US-based companies.

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INDIAN SCENE

Delhi software firm goes into Europe

THE problems involved in trying to win international business from an Indian base have persuaded one of the biggest computer companies, Computronics of Delhi and Bombay, to open offices in Brussels and Frankfurt.

"We would like to work in collaboration with European software houses, but we will also be seeking contracts from manufacturers and end-users," says Computronics president Vivek Singhal, who runs the Delhi end of the company while his brother, managing director Piyush runs the Bombay operations.

Computronics is interested in both system and application software, and will be giving programmers tours of duty in the European offices once some contracts have been landed.

Computronics, which now has a turnover of about £8 million, grew big by becoming the Indian agent for Electronorgtehnika, the Russian export agency, just at the time that the Indian government decided to expand computer business with the Soviet Union.

Russian computers installed in India have been paid for with system and application software, and Computronics has done much of the work itself, although it has farmed out a substantial quantity to other Indian organisations which have installed Russian machines (CW, July 6, 1978).

The Russian connection has been extremely valuable to Computronics, making the company the largest supplier of medium-scale computers in India. It has four machines of its own, an ES-1033 in Bombay, a 11022 in Delhi, a 11020 in Bhubai and a 1010 in Allahabad.

Computronics intends to continue to act as Electronorgtehnika's agent, and has been commissioned to run the Russian organisation's office in Iraq which will maintain Rind machines installed there.

"We would like to provide the same kind of support service for a Western manufacturer in the Far East," says Vivek Singhal.

Computronics has its eye on Malaysia, where it plans to open its own service bureau, and on Indonesia, Singapore and Finland; in general it would like to sell and support a Western minicomputer.

In a planned economy such as India's documents like manufacturing licences are extremely valuable commodities, and Computronics has a letter of intent for computer equipment manufacture. It is now seeking a suitable product.

"We are interested in manufacturing both in the Seepz free trade zone and outside it. In the latter case we would be looking for a product which would enable 70% of the output to be exported."

Discussions are at an advanced stage with Mael (form-

erly Inset) of Italy on a pilot programme under which Computronics would assemble 300 Mael 2000 or 1000 systems in Seepz for export to Yugoslavia. There are also plans to build 300 Videoplex terminals in Seepz for the Hungarian computer manufacturer Videoton.



ECIL micro under test

THE advent of the microprocessor has led to considerable growth in the variety of Indian-designed mini and microcomputers in development and manufacture. Our picture shows an ECIL Micro-78 microcomputer under test at the

public sector company's plant near Hyderabad. Based on the Intel 8080A microprocessor, the machine shown here is destined for the Indian Institute of Technology in New Delhi, where it will be used for data logging.

Maintenance company plans to diversify

TWO companies were born out of the ashes of IBM India. One, IDM, has become the ICL Prime agent in India, is running the service bureaux left behind by IBM and, because of the calibre of its IBM-trained staff is respected and accorded a good chance of surviving, and is making a success of its declared aim of Western collaboration (CW, May 24).

Although it maintains an air of supreme self-confidence, the other company carved from the rump of the IBM India business is less highly regarded. Called Computer Maintenance Corp. CMC, it is in effect the result of nationalisation of IBM's maintenance operations. It has the ambitious target of

handling maintenance of all computers installed in India, and is presently contracted to provide maintenance at 800 installations.

In addition to most of the machines left behind by IBM — the 370/155 at IIT Madras, one or two 300s, scores of 1401s and a few 1130s, 1620s, 7044s and 1800s — it is now under contract to maintain four Digital Equipment machines, two Robotron ES-1040s, three Burroughs machines, three ICL machines and some Inforex equipment.

It also has agreements to provide maintenance on future machines installed by CII, Honeywell Bull, CDC, ICL, Interdata and GCSS.

Now headquartered in

Hyderabad, it has ambitious (some would say unrealistic) plans to diversify into several other fields.

Already it is providing training for users on languages, database systems and communications, and is planning enhancements and modifications to operating systems, and plans to open a bureau in Bombay shortly.

This will be based on the Indian designed and built TDC-316 minicomputer, which CMC also plans to use for software development.

The EEC-hosted delegation of European software companies to India last year highlighted shortage of main memory on the IBM 370/155 at the Indian In-

Reports by Tim Palmer

Bombay company link with Wang

A MARKETING tie-up with Wang and agreements with Rand Information Systems are two of the major coups for India's most ambitious computer entrepreneur Lalit Kanodia, and his company, Datamatics of Bombay.

Even more ambitious are plans, not yet complete, to establish a large-scale offshore data preparation service for US corporations, siting the centre in Bombay and making use of the Indian Ocean satellite to link with the US Teletype packet-switched service and then to customers all over North America.

By skilful use of statistics, Kanodia can make the Indian economy sound like a super-California, and in his view, the potential of the national computer industry puts Silicon Valley in permanent shade.

So it is with relish that he reels off the impressive statistics relating to Wang, notably that it is currently the fifth fastest growing company of any size in the US.

The rigidities of a planned economy throw up some strange anomalies, and one of these is of particular benefit to Datamatics.

"We have already sold three Wang word processors; they are fairly easy to import because they are not classified as com-

puters," says Kanodia. The Indian company is also due to take delivery of two of the powerful new Wang 2200VS machines about now.

Datamatics has agreements with Wang to support their machines in various African countries, notably Nigeria, in Mauritania, and in one or two Middle and Far Eastern countries. It is writing several system software modules for the US, including a Fortran IV compiler which it hopes will be adopted by Wang.

With 75 analysts and programmers, Datamatics is keen to expand in that major Indian standby, software conversion, and to this end has signed agreements with conversion specialist Rand Information Systems involving conversion work in the UK, the US, France, Israel and Australia. It now wants to start a joint venture with Rand based in India.

More training needed

ALTHOUGH India has a surplus of university-educated manpower, the major computer companies believe that there is still an urgent need for training facilities for data processing personnel. Two of the biggest, Tata Consultancy Services and Computronics, are doing something about it.

"We provided 40,000 man-days of training last year," says Piyush Kohli, managing director of TCS. "We take in 60 to 70 new recruits every year, and spend between 10 and 15% of our total budget on training."

"But it is still not enough, and I am planning to establish a training school separate from the company near Bombay."

Vivek Singhal, president of Computronics is thinking along similar lines. "We are planning to establish a Computronics Institute for Computer Scientists in New Delhi. It will be a private, non-profit-making establishment."

SEMS adds two minis to Solar line

EUROPE's leading minicomputer maker, SEMS of France, has confirmed the continuation of its two parallel mainstream computer lines by following the launch of the Mitra 225 with two new models in the Solar 16 line, which bracket the three current models.

At the top end, the new Solar 16/75 is the first SEMS mini to offer one Megaword of main memory, and is claimed to approach the power of the Digital Equipment PDP-11/70.

Fast memory, with a 375 nanosecond cycle time is available in 32K-word modules, and standard memory with a 625 nanosecond cycle time in 64 or 128K-word modules. It is built around twin buses which can support up to four input-output processors, and the virtual storage operating system gives the user up to eight virtual partitions, each with a maximum capacity of four Megawords. There is also single and double precision floating point arithmetic.

Up to four 50 Megabyte disc drives can be attached, and real time, transaction processing and multi-task multiprogramming operating systems are supported. Fortran performance has been doubled over that of the 16/65, and APL performance by 30%. The Polybus offered with Solar machine allows multi-processor configurations to be put together with no theoretical limit on the number.

SEMS is aiming the 16/75 at

the scientific and technical markets, process control and communications applications.

The 16/04 is a replacement for the 16/05, and uses the same CPU. It is extremely compact, coming on two half-width circuit boards, and is offered with 32 or 64K-words of main memory, which can be all RAM or a combination of RAM and programmable read-only memory. Languages now available include real-time Fortran PL/1, real-time Basic and APL.

Base price for a 32K-word 16/04 is 24,000 francs, and for a 16/75 with 64K-words, console and one Megaword memory management system is 174,000 francs.

The Solar line contributes 42% of SEMS' turnover, which totalled 525 million francs, about £58 million, in 1978.

The balance is contributed by the Mitra line, which will be extended later this year with a powerful new model built using bit-slice microprocessors.

SEMS is still in process of establishing a UK subsidiary. It is already well-established on the West German market, where the Solar line predominates for historical reasons, and has also formed a Belgian subsidiary.

The UK subsidiary is to be headed by Douglas Mackenzie Bramley, formerly technical director of SEMS Computer Benelux.

Recruiting has been handled from the Thomson-CSF offices in Basingstoke, but SEMS Com-

Computers give a boost to Hitachi profits growth

ORDERS for large-scale computers at Hitachi totalled 292 in 1978-79, up from 208 in the previous year, and helped the company to a 19% growth in turnover in its communications and electronics division to about £1,000 million. The division includes integrated circuits, and a wide variety of other telecommunications and electronic products.

About 20% of the large computers went for export, almost all of them for marketing by ICL as the AS/6. Hitachi hopes to increase the proportion exported, currently 7% to 20% over the next five years.

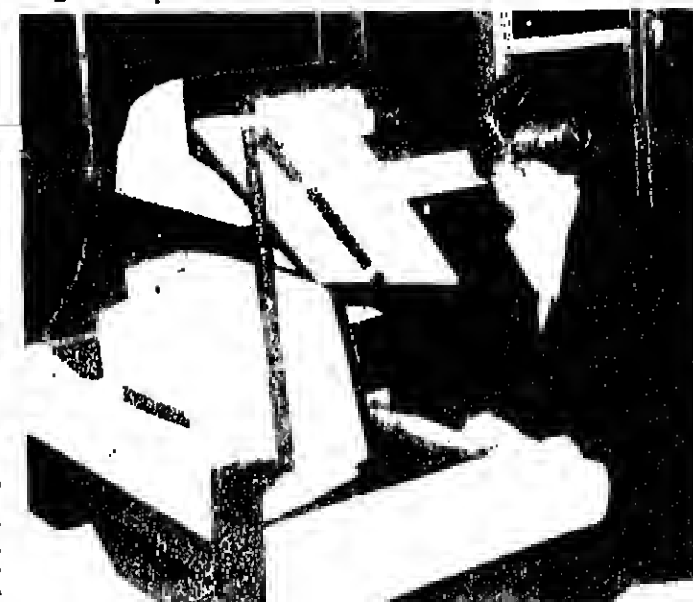
Investment plans for the current year include about £50 mil-

lion for computer and component capacity, the lion's share going to increased output of semiconductors. This is a major export earner for Hitachi, with 24% of its output being sold outside Japan. It already has a small plant in Dallas, Texas, and wants to site a plant in Europe.

Computers and semiconductors are currently the star performers at Hitachi, making a major contribution to the 25% growth in profits to £220 million in turnover up 9% at about £5,000 million.

Overall, the company's business is still strongly Japan-oriented with only 19% of sales being made overseas, down from 20% last year.

puter UK will be headquartered in another, as yet unspecified, location. Staff have been recruited and are currently undergoing training prior to formal inauguration of the company, which is likely to be in August or September.



East-West collaboration

ONE of the most mutually beneficial East-West collaborations in the computer industry is that between SEMS of France and Videoton of Hungary. Videoton manufactures versions of the SEMS Mitra mini line in Hungary under licence, and has collaborated with the French company on software developments. Our picture shows one of the original Videoton products developed around the smallest Mitra mini — a low-cost key-to-disc system. The mini is Videoton's VT60 single-board processor, and if the display looks like a TV set it is no coincidence. Videoton is one of Eastern

Europe's largest manufacturers of TV sets, and to keep the cost of the Videoplex as low as possible, it decided to use TV monitors for the displays. Outside the Cmccon countries, Videoplex is marketed in Yugoslavia, and since the system does not conflict with anything offered by SEMS, may also be offered in some Western European countries.

Underlining the close relationship, the Hungarian company was able to exhibit the VT600, which is its version of the Mitra 225, at the Hannover Fair this year, a few days before the French announced the machine.

Club takes 38% of market

THE benefits of the concerted French effort to establish a strong national presence in the small systems and peripherals market is underlined by the latest figures published by the French Club de l'Informatique which currently has 23 members, among them internationally known companies like SEMS, Intertechnique, Logibox and Benson.

The total French small computers and peripherals market is valued at 1,000 million francs in 1978, of which Club members secured 38%. However their combined turnover was considerably greater, 2,050 million francs, because one-third of their business, 530 million francs, was done outside France.

French launch data entry system

A MAJOR new data entry system capable of handling a wide variety of other processing tasks has been introduced by CMC-France. It was designed and is being built in France for the European market. Based on two Zilog Z80 microprocessors, and PDP-11/34, and CMC is using Control Data fixed 80 Megabyte drives, up to four of which can be attached.

Up to 32 terminals can be attached to the CMC 7800, and an innovative feature is a multi-protocol, multi-line communications processor.

CMC-France records more than half the total turnover of CMC-Europe, 153 million francs out of a total of 279 million in 1978.

Although there is some product exchange between CMC-UK and CMC-Europe, the two companies are not financially related. CMC-UK is owned by US minicomputer manufacturer, which is currently involved in takeover talks with an unnamed bidder. CMC-Europe has just been bought by Rediffusion of the UK (see Page 1).

lines, and each can use a different synchronous or asynchronous protocol. Languages on the 7800 are Kobol for real-time transaction processing, and RPG II for batch work. Anal Kobol is also planned.

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INTERNATIONAL NEWS IN BRIEF

Siemens opens a second micro centre in Germany

THE German giant Siemens has shown the importance it attaches to the need for training in the use of microprocessors by opening a second microcomputer training centre in Germany.

Sited in Düsseldorf, it complements the existing centre, opened in Munich in 1976, which already has given courses to over 5,000 users.

Siemens also has training centres in Vienna, Milan, Zürich, Madrid, Brussels, Paris and Scandinavia, and claims to be doing more to train customers in microelectronic techniques than any other organisation in Europe.

Traffic system

BANGKOK traffic congestion is now being monitored and controlled by a micro-based highway system from GEC Traffic Automation. Valued at about £730,000 the system handles 48 road intersections.

£1m Swiss order

THE Union Bank of Switzerland has given Nixdorf one of its biggest orders for the 8804 line of banking terminals. The order is for more than 2,000 systems for installation in the bank's subsidiaries, and is worth over £1 million. It was won in competition with 12 other companies. The Union Bank of Switzerland is also installing an enormous new complement of mainframes from Univac: three 1100/82s and an 1100/81, to replace its aged Univac 494s.

NatSemi in Israel

A NEW centre for the design of advanced microprocessors has been opened in Israel by National Semiconductor. The design of its first device, said recently by International Vice-president Bob Heikes to be the new 16-bit microprocessor known as the 1600, is expected to be complete by early 1980.

First French user

THE CICS development aid, Interest, has found its first French user, Texunion, which runs a 370/115 in Roubaix. Sold to the company by Sigos-CPP, Interest now has some 200 users worldwide and is marketed in this country by Circle Computer Consultants (Software File, July 20, 1978).

Personal privacy

A HARRIS poll in the US has indicated that an increasing number of Americans are worried about invasions of personal privacy. Of the 1,500 people interviewed, 52% felt that existing safeguards over the use of computers were inadequate.

Directory

A 544-page directory of programs used in commercial mining operations since 1970 has been issued by the US Bureau of Mines. It is available from the UK service centre of the National Technical Information Service, price £19.40.

Papuan upgrade

THE national airline of Papua New Guinea, Air Niugini, is to replace its two ICL 2960s with a 2950, and is buying Telecomputing's online transaction processing package TIPS to run on the new machine. Applications to be developed on the new machine include crew management and supply records.

1977
Our first 2960

1978
Another 2960/DME

1978
A 2976 operating under VME/B

Result:
A massive reserve of computer power.

1979
Our third 2960/DME

for 2900 Computer services **computel**

The US market for computers in general, and in particular for small systems, is so vast that it can provide enough business for a manufacturer with the right product to grow big quickly, without even looking for sales in Europe.

One firm that grew to nearly £40 million in turnover before actually seeking European representation is Qantel Corp of Hayward, California, a company that claims to outsell NCR now in the small interactive business systems market in the US.

Qantel systems have been sold in Europe for about four years, but only in

the Netherlands and on a very limited basis in West Germany. However, the firm has now acquired a network of distributors covering most of Western Europe and is looking for substantial sales from established computer equipment suppliers like its UK distributor, General Computer Systems.

Factors that have contributed to Qantel's success to date include user oriented software, low cost marketing through carefully selected distributors and the leadership of the firm's president, Doug Baker, a Canadian who has transformed the California company over the last five years from a small terminal manufacturer into a

major contender in the commercial systems market.

Baker knows more than most about this business, having taken Management Assistance Inc into the interactive commercial systems market in the early 1970s by setting up Basic/Four Corp before moving to Qantel late in 1973 with the mission of doing a similar job — only better.

Here, Baker talks to Keith Jones of Computer Weekly about the past, present and future of Qantel and makes some interesting predictions about how hardware and software will develop over the next few years.



Doug Baker (right), president of Qantel Corp, talks to Keith Jones of Computer Weekly, outside Qantel's headquarters at Hayward, Calif.

Qantel poised to repeat success in European market

"THERE is one inviolate rule in Qantel — no hardware or software will ever be made obsolete."

Doug Baker expressed this commitment as a computer marketing man whose experience goes back to the 1960s when the computer business was very much manufacturer oriented. At that time he was selling accounting machines for a Canadian firm called SCM Corp which was later taken over by CDC.

"In the 1960s the customers of the computer firms that dominated the market then got

half as much as they wanted for twice as much as they expected."

Baker promised, "In two years Qantel will offer 16 Megabytes of main memory to its new and existing customers and they will be able to use up to 100 display terminals because the 16 Megabytes will eliminate contention."

Qantel's system design philosophy largely weighs in favour of large memory capacities and dedicated user partitions rather than program swapping. The top end machine in the Qantel family, the 1450, already comes with

up to one Megabyte as standard. Asked about the processing capacity needed to utilise 16 Megabytes, Baker commented,

"Our systems will have several processors by then and the 16-bit word length of our CPU is all that is needed in a commercial machine. Most of the work involves file transfers. The computation side is trivial."

Looking at another customer-oriented development just over the horizon, Baker explained, "The next major step is to eliminate downtime by the redundancy of intelligence. This dynamic redundancy will in-

crease the load on the rest of the electronics and degrade the performance of the system when something fails, but the machine will not go down. We know that we can achieve it and I am sure that it is essential for our survival in the small systems business, because it will enable service calls to be optimised."

"When Qantel was in the terminal business it needed 80 service sites in the US to maintain equipment at remote locations."

Looking at software developments, Baker said Qantel's recently acquired business planning system, Qicplan, is extremely important for remaining competitive.

"At the moment small business computers normally just report history, but in two years from now," Baker asserted, "nobody will buy a business computer without planning tools."

Qicplan, along with most of the applications software for Qantel systems, was developed outside the company, but Qantel itself has worked on its two essential software products, the Qicbasic compiler and the Best disc operating system, since September 1973 when Baker joined the firm.

"At Qantel we avoided what I am sure were mistakes made in Basic/Four. For example, Basic/Four adopted the indexed sequential file access method while at Qantel we went for the tree structured method."

About 35 of Qantel's directly employed workforce of 800 are currently involved with software development.

On the manufacturing side, the firm buys in all the peripheral units incorporated in

its systems, including disc drives from CDC and the Texas company, Western Dynex, and printers from Centronics and Teletype Corp, but Baker estimates that Qantel itself adds about 50% to the final value of the hardware.

The company builds its own controller, memory and PC boards, and its IC suppliers include Hitachi and NEC of Japan for 4K and 16K RAM chips. The ubiquitous AMD 2900 bit-slice processor chip set is now used in all Qantel models apart from the smallest machine, the desktop 210, which is configured around a Zilog Z80 8-bit microprocessor.

All manufacturing used to be based at Hayward until about a year ago, when a plant was opened in Puerto Rico, a location selected, according to Baker, because talented and industrious labour was readily available, and not because it was cheap. "Puerto Rico has the same minimum wages as the US," Baker pointed out.

The Puerto Rico operation is to be further expanded to help meet growth in sales from \$16 million in 1978 to what Baker conservatively estimated will be a \$50 million turnover this year.

Qantel has been profitable since 1975, and the company's health is particularly important to Doug Baker because he has a substantial holding in the company — one of the reasons he was lured away from MAI, where he had no ownership.

Other major Qantel shareholders include Teledyne, a \$2 billion conglomerate that also owns 20% of Litton Industries, Arthur Rock and Co, the organisation that financed the

launch of Intel, and the Bank of America, the biggest bank in the world. About 200 Qantel employees also hold stock in the firm.

The company provides assistance for about half its distributors and also provides quite a lot of money looking for suitable international distributors.

Qantel took a stand at the Hannover Fair earlier this year, specifically with the aim of making such contacts, and company spent \$70,000 at the National Computing Conference in New York for the same reason.

About 50 Qantel systems have been installed in the Netherlands over the last four years, and in West Germany by the Dutch based distributor, Baker explained, "We approached us, rather than finding them, because at the time we were still establishing ourselves in the US. Frankly, I am not happy about the German operation at the moment, but we hope to do something about that."

Qantel's European coverage now takes in most countries including Sweden, where Qicplan is being sold by Altes, Swedish subsidiary.

Qantel is already established in a number of European markets such as Australia, where more than 20 machines have been installed, and New Zealand, which has more than 80 installations.

The potentially huge Japanese market is now being entered through C. Itoh Data Systems, one of the biggest computer equipment marketing organisations in that country.

Two organisations I visited, the Institute for Organisation, Economics and Management of Construction, which runs an ICL System 4/50, and the Academy of Social Science and an ICL 1904A, expect ES1035 (or larger ES1045) replacements shortly. The Mechano-Electro-Technical Institute, also in Sofia, expects to replace its three ES1020s with ES1035s or ES1035s later this year.

As with the mainframes, peripheral and component production is also allocated among Comecon countries. Bulgaria's ISOT is responsible especially for storage devices and produces disc and magnetic tape transports for the entire ES range. The specialisation is carried through to other member states. All the newer VDU's I saw were manufactured by Videoton in Hungary, and all the line printers, for the ES series, by Elwro at Wroclaw in Poland.

Qantel's UK distributor, GCS, expects to charge about £3,000 for Qicplan and, according to Murray, it is far easier, as well as far cheaper, to use than similar packages available on the market, such as the IBM's Plancon or the on-house mainframe software, like IBM's Plancon.

Murray pointed out that Qicplan only needs 16K bytes per user on a Qantel 1450 machine compared with the 100K per user taken up by Plancon on an IBM mainframe. Even more important, perhaps, is that Qicplan models can be programmed using a simple form technique, rather than by writing complicated compiled languages.

Qicplan has been used by some companies in Australia for up to three years and customers there include merchant bankers Hill Samuel, Wallerace Australia, the Australian subsidiary of the UK insurance company, and the largest consulting engineering firm in Australia, MacDonald-Warner.

Sofia centre of telecoms development

In the countries of East Europe, the members of the Comecon economic grouping, computer production and software development is now regarded firmly as a co-operative effort, supported by a high level of detailed planning and control.

The political core for this co-operation is the Central Committee for ES Production chaired by Professor Ilarionov, a corresponding member of the USSR Academy of Sciences.

Each Comecon country has its member and meetings are held twice yearly, by turn, in each member state. This is planning at its highest level which results in decisions on what is made and where.

A galaxy of sub-committees, meeting more frequently, supply the detailed information and control over hardware and software developments, systems, communications, external devices and, at the sharp end, production targets, material supply and labour requirements for the individual factories.

The ES1000 series is the major current development. This is also referred to as the Rjad unified range of mainframes, but I found that, at least in Bulgaria, this title is never used. Due to peculiarities in the Cyrillic alphabet the series is sometimes spoken of as the EC range, to add to the confusion. The ES machines were designed after the IBM 360/370 and will accept much IBM software without change.

A disc operating system essentially like DOS is found on the smaller machines of the range, ES1010 and ES1020, with QSES having the facilities of SVS on the larger machines up to ES1065.

Bulgaria's share in mainframe production lies in the medium range including ES1020, 1022, 1033 and 1035. The first two machines are equivalent to IBM 360/40 and have been in production since the early 70s at the modern and substantial plant, ISOT, situated on the outskirts of Sofia.

The ES1033/5 is its latest contribution and has marked similarities to the 370 series. Initial deliveries will be made within Bulgaria as replacements for its ageing ICL and other machines.

Two organisations I visited, the Institute for Organisation, Economics and Management of Construction, which runs an ICL System 4/50, and the Academy of Social Science and an ICL 1904A, expect ES1035 (or larger ES1045) replacements shortly. The Mechano-Electro-Technical Institute, also in Sofia, expects to replace its three ES1020s with ES1035s or ES1035s later this year.

As with the mainframes, peripheral and component production is also allocated among Comecon countries. Bulgaria's ISOT is responsible especially for storage devices and produces disc and magnetic tape transports for the entire ES range. The specialisation is carried through to other member states. All the newer VDU's I saw were manufactured by Videoton in Hungary, and all the line printers, for the ES series, by Elwro at Wroclaw in Poland.

Most interesting for me were the software tasks for Bulgaria. Sofia is apparently the centre for communications developments, and this includes not only use of the IS series but also the new SM series of minicomputers that are to replace the bottom end of the ES range.

The SM4 is the largest of these and has been designed and manufactured as a communications processor by Elorg in the USSR. It uses LSI and is said to be comparable with Prime 300 or the Milre 125. Smaller versions, the SM1, 2 and 3, are manufactured in East Germany, again to Russian design.

The Institute of Computing Techniques in Sofia is the premier institute for communication software development. It is a large concern and responsible for much of the manufacturing design for storage devices produced at ISOT.

Under its director, Dr Zhivko Zhelezov, it has recently been given the task of setting up an experimental packet-switched network using the ES1022 as host and SM4 as node computers. It is a fairly modest affair with three nodes and four host computers together with an unspecified number of terminals. The problems they are meeting lie in the operating system software for the ES range, which does not contain a mechanism for transfer of files in a network environment. Neither is the linking hardware very suitable. At present the system in the host permits the link to look like a terminal operating at maximum speed of 2,400 bauds.

Another body within Sofia which is actively engaged in network design is the Ministry of Posts and Telecommunications. A specialist working party has been set up, whose task is to initiate a national packet-switching network on the lines of the Post Office PSS.

Talks have been carried out with the French organisation Transpac but not, apparently, with UK Post Office officials. The initial purpose of the network will be to link the 27 districts of Bulgaria, corresponding to UK county councils, with terminal and host computers. The communications processor proposed is again an SM4, and some spin-off from the work of the Institute of Computing Techniques is expected. One major problem is the state of public telephone lines in Bulgaria, which is down to 1.2K bytes for switchable lines.

Centralised planning is, of course, no new experience for Bulgaria. I met several examples during my visit. One of the most striking is the Institute for Organisation, Economics and Management of Construction which is part of the Ministry of Construction and Buildings.

Its computing centre provides the planning resource for management and design and is also seen as a model for the introduction of computer-based management systems into the construction industry. The centre itself contains an IBM 370/175, and an IBM 2705 communications processor, and is supported by a Danish RC3600 add system. An ICL 550 is still running there but is due to be

replaced by an ES1035.

Applications software is dominated by finite element work, most of which is written by the centre's staff. Packages in use include Genesys, IBM ICL and a Pert-like system. Compilers used are Fortran, Cobol and PL/I.

Much effort is spent on programs to solve particular problems in structural engineering, such as stresses in roads, bridges and dams, wind effects on buildings and earth tremor analysis — this latter of much interest to Bulgaria's neighbours in the earthquake zone.

Information control and dissemination is seen as the key to most of the technological and social developments required by the modern state.

Sofia is the home of one of the largest organisations of this kind in Eastern Europe. The National System for Scientific and Technical Information contains as part of its function the Central Institute for Scientific Information and Management (CISTI). CISTI assists in co-

ordination of computer work for Bulgarian scientific organisations, supplies technical and scientific information at all levels and, most important of all, runs an automatic system of information processing, storage and retrieval.

At present it runs an IBM 370/16S with rented IBM software. The database is compounded from many sources. It includes Compendex from New York, Biosis from Philadelphia, Inspec from London, Inis and Agric from Vienna, and ICST and Viniti from Moscow.

Negotiations are also currently being carried out to link the source of Inis (nuclear data) and Agric (agricultural data), both located in Vienna, with CISTI via the International Research Centre at Laxenburg near Vienna (IIASA) so that data exchange as well as updating can take place. This is a long-term project and likely to involve the Institute of Computing Techniques which holds the central role in network development.

Poland and described the emerging computer industry in the Eastern European countries in a Computer Weekly article, The Wind of Change Blows in Poland (CW, June 17, 1978).

Now, three years later, during a second visit to another Comecon country, Bul-

garia, he has found it even more difficult to separate developments there from the general situation in Eastern Europe: computer production and planning in Bulgaria form part of the overall Comecon effort.

Dr Beauchamp is director of computing services at Lancaster University.



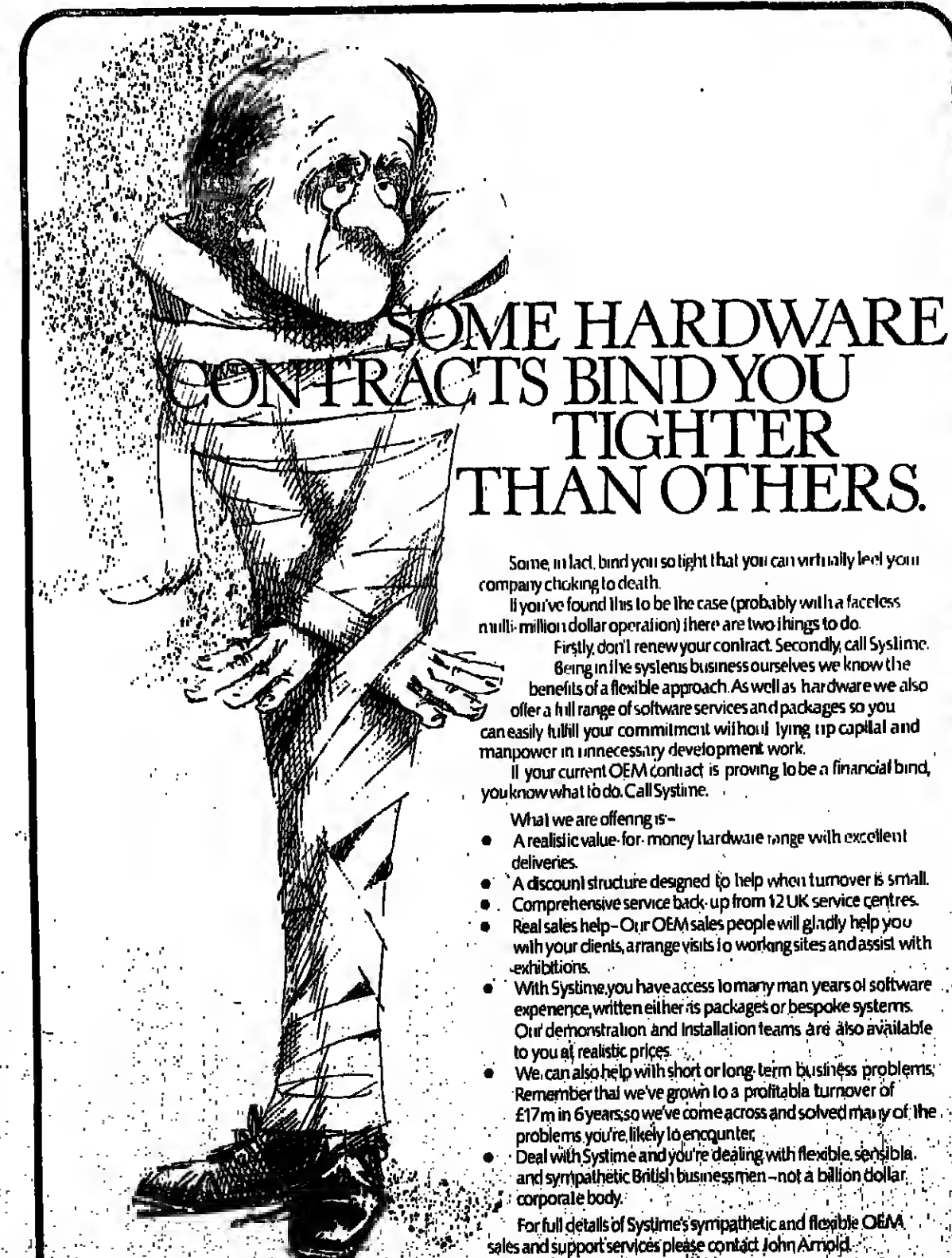
Panoramic view of Sofia, the capital of Bulgaria.

IN 1976 Dr KEN BEAUCHAMP visited Poland and described the emerging computer industry in the Eastern European countries in a Computer Weekly article, The Wind of Change Blows in Poland (CW, June 17, 1978).

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Management reporting system Qicplan seen as 'winner'

QANTEL is fully aware that effective software is the vital ingredient in any formula for survival in the commercial systems market these days, and the company already offers a group of applications packages called Solutions and a report generation system called, predictably, Report Generator.

Qantel now believes that it is on to a winner with Qicplan, a management reporting system developed in Australia by Quickplan Inc, a small Sydney software house that originally developed the system for Wang computers but which has now sold the exclusive worldwide marketing rights to Qantel.

Quickplan's managing director, Chris Murray, who now spends a great deal of his time with Qantel at Hayward, explained that Qicplan is a full scale database management system with a hierarchical database structure similar to Total, but that its main purpose was management reporting.

Qantel's UK distributor, GCS, expects to charge about £3,000 for Qicplan and, according to Murray, it is far easier, as well as far cheaper, to use than similar packages available on the market, such as the IBM's Plancon or the on-house mainframe software, like IBM's Plancon.

Murray pointed out that Qicplan only needs 16K bytes per user on a Qantel 1450 machine compared with the 100K per user taken up by Plancon on an IBM mainframe. Even more important, perhaps, is that Qicplan models can be programmed using a simple form technique, rather than by writing complicated compiled languages.

Qicplan has been used by some companies in Australia for up to three years and customers there include merchant bankers Hill Samuel, Wallerace Australia, the Australian subsidiary of the UK insurance company, and the largest consulting engineering firm in Australia, MacDonald-Warner.



'Government should consider splitting responsibility for telecoms even further'

OFFICIAL and business mail accounts for around three-quarters of postal traffic in North America and Europe. It is mostly collected from, and delivered to, the most densely populated centres of towns, where distances are shortest and both collection and delivery costs incurred per item are therefore lowest.

Yet the postal services are in grave danger of losing most of this traffic to the newest forms of inter-terminal electronic mail, facsimile document transmission, and communicating word processors (see Marketview, June 28), because of the growing unreliability of their services, and lengthening delivery delays, especially in international traffic. Recent mail posted from London has taken between seven and 10 days to reach Paris and Brussels, and up to two weeks to the US, longer than it took by sea in the 1920s.

The postal authorities have thus been urgently analysing the causes of these lengthening delivery delays, and casting around for remedies. The main cause is the difficulty of recruiting labour to man postal sorting offices at the unseemly night hours when most mail has to be sorted if it is to be delivered the day after posting.

Ten years ago, the answer appeared to lie in the widespread installation of automatic sorting equipment. But this suffers from the defect that it requires manual keyboard encoding of a magnetic sorting code on letters of widely differing sizes. This operation has now replaced manual sorting as the main bottleneck in letter transmission, especially when senders omit to add the proper PO codes to addresses at the right places.

Since automatic sorting equipment has been powerless to restore the reliability of guaranteed next-day delivery to

postal mail within European countries, and within a known number of days in international traffic, the postal authorities are now looking for aid to the same method that their business clients might otherwise adopt directly electronic mail. Intelpost between London, New York and Washington is a first step in that direction.

As Table 1 shows, Intelpost is a hybrid service combining traditional postal methods of collection and delivery with electronic facsimile transmission. British senders have to hand in their Intelpost mail to one of three post offices in central London, or send it there from other parts of the country by ordinary mail. For urgent dispatches, Expresspost can arrange a special collection within the inner London area at an extra charge.

At the Stock Exchange post office, a routing sheet followed by all the sheets of each letter

MARKETVIEW BY FRED LAMOND

Short of last minute technical or political hitches, this week will have seen the start of an interesting experiment in public electronic mail: the Intelpost service of high-speed facsimile document transmission by satellite wideband link between the Stock Exchange post office in London, the World Trade Centre post office in New York, and the Capitol post office in Washington, with ordinary mail or special messenger collection and delivery at both ends.

Initially, the experiment will be free of charge to a small number of selected busi-

ness users. Determined opposition from telecommunications common carriers makes it still uncertain whether it will be followed by a permanent fee-paying service. Similar political battles are being fought in Intelpost services to end from Paris and Brussels.

In this Marketview, Fred Lamond discusses the reasons for Post Office interest in electronic mail, and for the determined opposition of both private and public telecommunications common carriers to this venture.

(which must be A4 size) are inserted into a Rapicom facsimile transmitter, which takes from 10 to 40 seconds to scan each A4 page and convert its contents into a 512K to 2M bit stream. The bit stream is transmitted at 50K bps via the Intelsat IV satellite to the Capitol post office in Washington, or onwards via a terrestrial microwave carrier to the World Trade Centre post office in downtown Manhattan, where a photocopy of the original appears almost simultaneously with the transmission from London.

At either of the two US post offices, recipients may collect their Intelpost mail in person. Alternatively, it will be sent to

them by ordinary mail to any part of the US. Special messenger delivery is also available at an extra charge within the central Washington and Manhattan areas.

If and when the experimental free service is followed by a normal fee-paying public service, the UK Post Office is planning to charge a basic £4 fee for each dispatch plus £2 for each additional message sheet beyond the first. This fee will include normal postal collection and delivery — or Poste Restante — at each end, with additional Expresspost charges for special messenger collection or delivery within the inner London, Manhattan or downtown Washington areas.

As Table 2 shows, transatlantic Intelpost will initially cost substantially more than airmail for the same documents, but take only 24 to 48 hours from sender to addressee, or even less than an hour if the addressee collects the package himself from the destination Intelpost office, or uses special messenger delivery.

But Intelpost will also cost less

than ordinary mail to any part of the US. Special messenger delivery is also available at an extra charge within the central Washington and Manhattan areas.

Intelpost should thus meet considerable need in the business community and be successful if it is allowed to go to the ground, in the face of a considerable political opposition that it is meeting from telecommunications common carriers in the US and Continental countries, not to mention France and Belgium.

In the US, the International record carriers (ITT Worldnet, RCA Globcom, and Western Union International) are objecting to the regula-

tion of their objections, and other objections raised in the US Senate against Intelpost, the electronic mail by the USPS, there is still some doubt whether the FCC will allow the experimental free service that it has licensed to be followed by a fee-paying one.

In Belgium, the state-owned but autonomous Régie des Télégraphes et Téléphones, RTT, and the government's Ministry of Posts have been deadlocked since last year as to which of the two should be the US Postal Service's partner in Intelpost. As a result, there are at present no plans or dates for opening an Intelpost office in Brussels.

In France, as in the UK, the Post Office and Telecommunications are the responsibility of separate general directorates within the same State Secretariat for Posts and Telecommunications (P&T), which is still run as a government department. The general directorate for the Post Office (DGP) had assumed itself to be the US Postal Service's natural partner, and had as far back as last September's Sieob named May 15, 1979 as the opening date of the free trial service to New York and Washington, and July 1, 1979 as the beginning of the fee-paying service. An Intelpost office is ready at the Palais des Congrès at the Porte Maillot in Paris.

But when the May 15 deadline came, the DGP's sister general directorate for Telecommunications (DGT) simply refused to put a 50K bps wideband link at the DGP's disposal between the Palais des Congrès and the Intelsat IV earth station.

The US IRC's opposition is understandable because they are private corporations whose bread and butter is at stake. But Belgian and French telecommunications opposition is much odder, since they are as state-owned and/or run as the Post Offices themselves, albeit with separate budgets. All the odder since they both stood to gain revenue from the lease of the wideband link to their respective Post Offices, without incurring any of the administrative and sales overhead costs of the new service, nor the cost of providing the special messenger service, probably at a loss.

French and Belgian telecommunications opposition can only be explained by a justified fear that transatlantic Intelpost would only be the first step towards the provision of similar intra-European services, and finally of internal services

Process	Methods used		Comparative	
	Postal	Electronic	Speed	Cost
1 Collection	Mailbox or PO counter	Office telefax or telex terminal	A few hours difference at most	Additional rental cost of office terminals
2 Sorting	Physical, by hand or mechanical sorting equipment several times	Electronic, by stored program computer	Hours or days depending on number of sorting nodes	Physical cost rising, while electronic cost dropping
3 Transmission	Physical, by van, train or aircraft	By cable, microwave or satellite	Hours or days depending on distance	Physical cost rising, while electronic cost dropping
4 Delivery	By postman or special messenger	Office telefax or telex terminal	A few hours difference at most	Additional rental cost of office terminals

Routes taken by:
Traditional postal mail
Intelpost
Telex and telefax

Table 1: Postal Intelpost and electronic mail compared

Length of Message	When sent by			
	Air Mail	Intelpost	Telex	Telefax
One page letter: 1,000 chars	£0.11	£4	£5.60	£2.25
Two page letter: 2,000 chars	£0.11	£4	£5.60	£7.50
Three page letter: 3,000 chars	£0.11	£8	£8.60	£11.25
Three page letter: 10,000 chars	£0.185	£8	£14.00	£19.00
Delivery delay:	7-14 days	1-2 days	None. Immediate receipt	None. Immediate receipt

Table 2: Speed and cost comparisons for London-New York messages

within each country. Indeed, the French Post Office, DGP, announced last September that Intelpost would, if commercially successful, be followed quickly by an internal French 'Teleposte' service between main post offices in Paris and each of the 14 most important French provincial cities.

French Telecommunications, DGT, have their own plan for exploiting the budding electronic mail market. Since last autumn they have themselves sold or rented to interested telephone subscribers a French-built Group 2 (3 minutes per A4 page) facsimile terminal costing £3,000 to buy or £130 per month to rent. At this price, their market projections see the number of installed facsimile terminals in France rise from 4,000 in 1977 to 17,000 in 1980 and 56,000 in 1985.

DGT boffins are also discussing with a number of French manufacturers the design and costs of a much cheaper mass-produced Group 3 (1 minute per A4 page with compression, when connected to a 4,800 bps modem) facsimile terminal, as soon as CCITT has agreed on

Group 3 transmission, compression code, and hand-shaking standards.

There are rumours of plans to sell this for as little as £175 to £290, if the manufacturer could be guaranteed sales of around five million units, which means to two out of every five French telephone subscribers, which would have to include a large number of domestic subscribers as well as all large and small businesses.

It is doubtful whether a general public as conservative as the French could ever be persuaded to such numbers in their own homes, or even small businesses, even if the only alternative were reliance on a traditional mail service increasingly subject to unpredictable delivery delays.

But it is certain that hardly any French domestic telephone subscribers, and only a minority of French businessmen, will do so if they have the possibility of getting a service almost as fast at a lower cost from their local post office. Hence the DGT's determination to block these new postal services, or else to control them themselves.

The French DGT's reason for wishing to saturate the market with facsimile terminals is the same as British PO Telecommunications' reasons for the Buzby advertising campaign,

and Prestel sponsorship to get domestic telephone subscribers, whose installation charges have been heavily subsidised for the sake of universality of service, to use their lines more and incur more call charges, on which the telephone service relies to recoup its investment in subscriber lines.

But their reliance on electronic mail to do so has nonetheless an air of unreality. Nothing would be more likely to bring the whole French telephone network again to a complete standstill than if every French business large and small tried from 1800 onwards every evening to transmit all the day's mail over the dial-up telephone network at 1 to 3 minutes per page.

Terminal-to-terminal electronic mail over the dial-up public telephone network will only become realistic in any European country for more than a small fraction of all business mail when subscriber end lines have been digitised to allow 48K bps data and/or text transmission. For this purpose they would have to be re-laid with either four-wire or optical fibre cables, a process that will take most European PTTs until 1990 and beyond.

By 1980, on the other hand, French telecommunications will have completed a digital overlay trunk line network, Transmif, for both voice and data communications. With this, and current French plans for the Telecom 1 domestic communications satellite, there should be ample long distance trunk communications capacity.

The French Post Office's Teleposte plans are a much more realistic way of using this abundant trunk capacity for speedy electronic mail overnight, when the network is little used for voice traffic, and only between principal post offices in each city, thus not overtaxing the switching capacity of local

The politics behind the battle over electronic mail



telephone exchanges.

This dispute between the two halves of the French PTT, as that between the Belgian Post Office and RTT, has a number of lessons for other European governments and PTTs as well. Will similar disputes not spread to other countries as well, if postal services and telecommunications are split between different authorities, as the Nora Report has recommended in France, and the Carter Committee in the UK? After decades of running the two services under the same government ministry or state board when they had little in common, is it logical to split them at the very moment when postal services are about to become more dependent on long distance telecommunications links in order to survive?

If the two services are to be split, then the British and French governments (and any other governments contemplating similar moves) should consider splitting responsibility for telecommunications services further between

● a national authority responsible only for the long distance trunk network, akin to AT&T Long Lines in the USA, and the UK's Central Electricity Generating Board;

● local and/or regional telephone companies to run the local distribution exchanges and subscriber end lines, as is already the case in Hull, Denmark, Portugal and the USA.

Under such an arrangement, the Post Offices would only have to deal with the national trunk network authority to obtain wideband channels between city centres for Telepost services. The trunk network authorities would have no reason to refuse such capacity, since they would have no financial interest or responsibility for the local subscriber end lines and their usage.

Technologically, long distance communications, based increasingly on a choice between terrestrial microwave carriers and communications satellites, are diverging more and more from the cable-based local distribution networks. But these too will require a great deal of capital investment over the next decade, probably involving their re-laying with optical fibre networks.

If the boundaries of local telephone companies were the same as those of local government authorities, especially the metropolitan district authorities in the UK, and local governments were given a financial share in the local telephone company, they would be given an incentive to switch some of their metropolitan investment budgets from roads and public transport into a faster enhancement of the local telecommunications network, since the advanced telecommunications of the late 1980s may make much business travel and commuting unnecessary.



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than the transatlantic International record carrier connection charges for transmitting the same documents between Group 11 (3 minutes per A4 page) telefax terminals installed in the sender's and addressee's offices, or between telefax terminals except for the shortest messages. And for neither

Federal Communications Commission that the US Postal Service is usurping the position of electronic mail carriers in Atlantic that has traditionally been theirs. Working hand in hand with European PTTs, they are developing telefax and data communications links.

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Facsimile facts

THERE was some confusion in the specifications of facsimile terminals in Marketview (CWI, June 28). The two standards adopted by CCITT in 1977 were both for analogue facsimile terminals, and not, as implied in the article, digital terminals. The analogue terminals do not therefore require modems. Group 1 terminals use frequency modulation to transmit an A4 page in six minutes irrespective

of contents; Group 2 terminals use amplitude modulation with phase compression, and transmit a page in three minutes.

The CCITT standard for Group 3 terminals has not yet been adopted.

It will be for digital facsimile terminals with coded compression, which will be able to transmit A4 pages in one minute when interfaced to a 4,800 bps (not 48K bps) modem.

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S. Africa sets up DP school

A COMPUTING school has been set up in South Africa to help combat the acute shortage of programmers.

Called Impala Computing, the school has been established by Greek computer specialist Dino Aravindinos and runs four-month courses designed to teach the student the main aspects of programming, including hands-on experience on an IBM System 34.

Aravindinos claims that his school is the only one of its kind in South Africa, and that "the students are supervised by another student who proved himself in the previous month's intake and who is further overseen by highly qualified tutors."

Attributing the country's massive shortfall of trained programmers to emigration — particularly to Australia and Canada — and to local companies which are not prepared to employ inexperienced people and train them, Aravindinos suggests that his school will alter the situation by giving students the skills required.

Applicants for enrolment at the multi-racial school are put through a pre-selection course.

Mark III centres

GEISCO has added two more centres to its Mark III time sharing service, in Riyadh, Saudi Arabia, and Caracas, Venezuela. The Riyadh centre takes the form of a walk-in bureau, but access to the service by local telephone call is now possible from over 600 cities in 24 countries. Other Venezuelan cities will gain centres next year.

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COMPUTER WEEKLY INTERNATIONAL

New Zealand claims world's biggest 2900

THE New Zealand government is due to become, once again, the proud possessor of the biggest ICL 2900 in the world.

Over the next few months, the 2980 at the Trentham computer centre, in Wellington, will get a £2 million upgrade to a dual processor, despite pressure on the government to prune spending. Many other upgrade requests are expected to be deferred by the government.

Trentham is one of the government's four major installations, each handling the requirements of several departments — and each, incidentally, supplied by a different manufacturer. New Zealand central government might be seen to be "hedging its bets" in hardware, with processors from IBM, ICL, Burroughs and Univac.

The 2980 already processes work for the

Agriculture and Fisheries, Forestry, Statistics and Scientific and Industrial Research departments. The rapid growth of this workload is the prime motive for the upgrade, says Trentham centre manager Brian Gibson.

Under development, however, is an online system for the Customs Department, which will become one of the centre's major applications in the early 1980s. This will use the latest version of the IDMS database system, with its teleprocessing enhancements, running under the 5X32 version of the VME/B operating system.

Operation under 5X32 will start on the new processor when this goes live in mid-July. For about three months the configuration will run in "twin" mode, with the older processor still running the 5X27 release.

Dual running under 5X32 is expected to begin in November.

Besides the second order code processor, the 2980 will get a memory upgrade to almost 8 Mbytes, and more EDS 200 discs and tape units.

Approval of the Trentham request indicates the importance attached to the work of the centre, says Gibson. In particular, trade statistics to be available from the Customs system will be far more accurate and up-to-date than those published previously.

The 2980 was the largest in the world when originally installed, but was soon overtaken. ICL has confirmed that with the latest upgrade, Trentham regains its leading position.

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Aerospace firm bids for Microdata

AFTER losing out to Northern Telecom in its bid to acquire control of Data 100 (CW, May 25, 1978), US aerospace giant McDonnell Douglas has declared as one of the suitors for US mini-maker Microdata Corp.

ITT, one of the suitors already identified by Computer Weekly (July 5), has pulled out of the bidding following a sharp rise in the Microdata share price.

McDonnell Douglas, maker of the ill-fated DC10 airliner, has interests in process control, digital telephone equipment and medical instruments, and is keen to get into the mainstream of the computer business.

ITT withdrew last week after the Microdata share price reached \$30.50, some \$5 higher than when negotiations started. It is keen to expand its interests in the automated office business, but although it succeeded in acquiring daisy-wheel printer specialist Qume, also lost out. AM International in its bid to acquire Inproguard Systems (CW, December 21, 1978).

Another possible contender for Microdata is Xerox Corp. Microdata owns CMC-UK.



Into Arab territory

CONSISTENTLY big exporters, Redifon Computers has installed its data entry system in some exotic locations. And the company has been quick off the mark in the Far East. Our picture shows a Redifon R850 system installed at the Qatar Petroleum Producing Authority in Ocho, Qatar. It will prepare tapes for processing on an IBM 370/118 mainframe at Petroleum Development, Oman and the R850 handles invoicing, materials control, salaries, general accounting and personnel.

Redifon has also sold its first R850 in the USSR. The customer is V/O Prodnitry, which will use the system for administering its food import-export business, which includes caviar, tinned fish, thoroughbred horses, piglets, cattle and zoo animals.

Threat to 23,000 jobs in Canada

TRANSBORDER data flow could cause the loss of 23,000 data processing jobs in Canada by 1985, mainly because an increasing number of US-based companies will hold files on large scale systems at local office instead of on smaller computers at their Canadian subsidiaries.

This prediction has been made in a report by the Canadian Consultative Committee on the Implications of Telecommunications for Canadian Sovereignty. The report also warns that various kinds of data will be placed beyond the protection of Canada's privacy and freedom of information laws, and sees the danger of computer crime deterrence and detection being reduced in effectiveness.

In addition, it warns that the greater use of US and other foreign computing services could undermine domestic control over disruptions caused by strikes.

Another danger that the

report foresees is a greater dependence on foreign technicians which could reduce the overall pressure to develop computer systems for domestic needs.

Canada's domestic telecommunications system could also be neglected, according to the report, by data being imported into Canada via foreign-owned satellites and rooftop antennas.

One way of creating a lot of new data processing jobs, according to the report, could be the heavy promotion of Teldon, the Canadian government's videolex service (CW, April 12).

Itel offers most powerful mainframe

From page 17
processor is being serviced. This is not at present possible on IBM's attached processor systems.

Performance of the AS/7 is claimed to match or exceed that of the IBM 3033, so that Itel now has a complete range of large-scale systems offering a power range considerably greater than that offered by IBM's 3033 line.

The channelsubsystem for the AS/6 and AS/7 has also been enhanced, and in particular now supports IBM's new 3370 disc storage subsystem. The 3370, announced with the 4300, provides 570 Megabytes per spindle, making it the biggest drive currently offered by IBM.

The European announcements from Itel are completed

by formal launch of the IPL Systems Model II and III IBM-compatible processors (CW, June 14). These machines are the top two models in the line marketed in the US by Control Data as the Omega 480.

Itel calls the machines the AS/7020 and AS/7030, and they are offered as direct alternatives to the IBM 4341. The 7020 is claimed to match the power of the 4341, while the 7030, offered as a field upgrade, provides 40 to 50% better performance, and main memory of up to eight Megabytes, double that on the 4341.

Full microcode assists for VM/370 and OS/VS1 are included in the two models, and Itel promises to provide a DOS/VSE Assist within one year of

IBM making its first European delivery of this product.

West Germany is a bright spot in the financial gloom surrounding Itel's business. Citing the speed with which Itel was

able to come up with the answer to the E-series, Itel Germany experts to report a 50% increase in turnover for the first half of 1979, just closed, to around DM 30 million.

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Contact: Jim Inker

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- * **TECHNICAL CONSULTANTS** - with upwards of 5 years software design and implementation experience.
- * **SPECIALIST PROGRAMMER/ANALYSTS** - with between 3-5 years, preferably real-time software design experience.
- * **PROGRAMMERS** - probably Graduates, with around 18 months experience in this field.

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Contact: Andy Wright

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Contact: Margaret Stevens

For further information on any of the above vacancies, please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

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Contact: Mike Crennan

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Contact: Andy Wright

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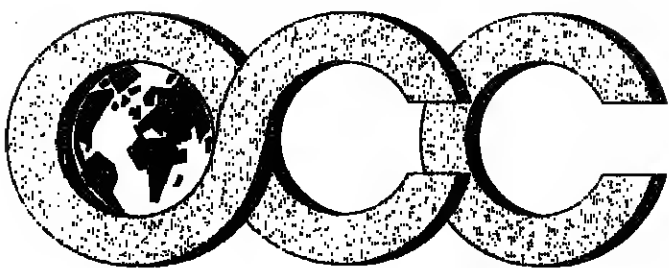
If you possess some or all of the following skills and abilities:

- Are a bright self-starting individual able to get on with the job with minimum supervision.
- Consider yourself to have a good understanding of DOS/VS and IBM System/370.
- Have had some programming experience (Systems or application).
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Our client is WR Grace, the multinational company manufacturing and marketing a wide range of industrial chemicals. Worldwide the group sales exceed £4,000 million and in Europe there are manufacturing or marketing sites in most countries. A computer network links these sites and there is now a vacancy for the key position of

c. £20,000

■ Based at either of the data centres—Epernon (France) or Worms (Germany)

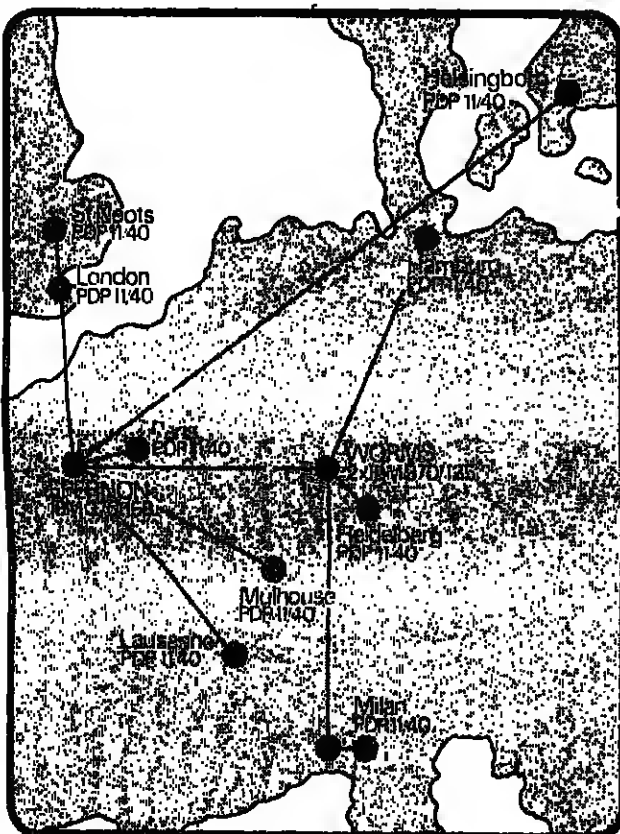
The person appointed will take charge of all hardware and software matters relating to the mainframes at both data centres; the terminal computers; and the TP network. The functions include: evaluation of hardware and software alternatives; trend analyses; performance monitoring; development of standards and procedures; day to day software support with a team of systems programmers. The current hardware is shown on the map, but a major upgrade is planned for the near future, involving 2 x IBM 4341's at Epernon and 2 x IBM 4341's at Worms to replace the IBM 370's, and 13 x IBM 8100's to replace the PDP 11's. The software environment includes DOS/VS, POWER/VS, VM, DL1, CICS, etc on the mainframes and RSX11M, DECNET and SERIES IV on the PDP 11's.

Candidates must be thoroughly competent technicians in the appropriate fields and must also have excellent managerial skills. The position will involve travel between the various sites in Europe and candidates need the personality which will allow them to cope with the pressures involved. English is the working language, but knowledge of a European language would obviously be beneficial.

Client interviews will take place at our offices on Tuesday 14th and Wednesday, 15th August. Final interviews will take place at Epernon or Worms soon after.

Please ring Neville John on 01-242 9356 (day) or write to the address below, quoting ref: 748/CW/INJ. If it would be more convenient to telephone in the evening or during the weekend, ring Farnborough (Kent) 52880.

OCC Computer Personnel Limited, 16, Bedford Row, LONDON, WC1R 4EB



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Executive & Professional Recruitment
GP House, 155 Hamstead Road
Birmingham, B20 2RL

MANAGEMENT SERVICES DEPARTMENT

The City Council operates an ICL System 4/50 and a Univac 1100 with terminal network on a time-share basis. We now require the following staff to work in the operations area:

Computer Operator

£5285-£6765 (under review) Grade A4 (Ref MS21). The successful candidate will preferably be an experienced System 4 operator, but a Univac 1100 or IBM background would be considered. Minimum requirements are 5 years' experience (including English and Maths) and 3 years' experience in computer operating.

Junior Computer Operator

£4407-£6002 (under review) Grade A1 (Ref MS21). The successful candidate will preferably have at least 5 O levels (including Maths and English) or one year's experience of data processing. He/she will also be expected to have a basic understanding of the City Council's computer system and to be able to work within a Local Authority.

Both these posts are in a career progression scheme where advancement is based on performance, experience and achievement. Training will be given where appropriate.

There are excellent benefits including:—

- up to 24 days' annual leave, PLUS an extra day off every two weeks
- interest-free annual season ticket loan
- subsidised canteen
- close to Victoria main line, tube and bus terminals.

To obtain application form please send postcard, telephone or call at the Personnel Management Division (quoting appropriate reference number), PO Box 240, WESTMINSTER CITY COUNCIL, City Hall, Victoria Street SW1E 6QP, telephone number 01-634 6666 (8 lines answering service).

Closing date 2nd July, 1979.

LANCHESTER POLYTECHNIC AT COVENTRY FACULTY OF APPLIED SCIENCE Department of Computer Science

THE PERSON should have recent practical experience in Computer Science and/or a degree in Computer Science. Previous teaching experience would be of considerable advantage. For application form and job specification, please apply in writing enclosing a self-addressed envelope to the Personnel Officer, Lanchester Polytechnic, Priory Street, Coventry CV1 3PL, returnable by 3rd August, 1979.

HERTFORDSHIRE COUNTY COUNCIL COBOL PROGRAMMERS

Salary up to £2180 p.a. (at present under review)

Vacancies exist for experienced programmers to work in the Data Processing Development Team. The latest NCR Criterion range of 1M byte 8580 computer with large disks, fast tapes, and terminals, providing virtual storage and interactive programming facilities is now installed.

A wide range of applications are in use, serving the needs of most departments within the County Council. The schedule of new development looks towards the further growth of the on-line and information systems work.

Candidates should have had one year's successful programming experience, preferably in COBOL.

We offer a partial career development for Programmers and Analysts with a progression scheme to accelerate you through the salary scales.

Generous holidays, an attractive contributory pension scheme with a wide range of benefits, ideal working conditions — new offices and staff restaurant — and a range of sporting facilities.

Removal, disturbance and lodging allowances payable in approved circumstances and assistance with housing may be given.

Applications (no forms), giving full details of past experience, age, and present salary, should be addressed to the County Treasurer, County Hall, Hertford, quoting ref: CP10, by 30 July, 1979.

HAWKER SIDDELEY Brush Electrical Machines Ltd Computer Programmers

We have vacancies for two Computer Programmers. Ideally applicants should have knowledge and practical experience of commercial programming particularly in COBOL, or a degree in computer science. However we will consider applications from graduates in other preferably related disciplines who can demonstrate a keen interest in a career in computers.

We offer an attractive salary coupled with conditions commensurate with a large and successful company.

Please contact Mr. D. G. Dewick, Assistant Personnel Officer, Brush Electrical Machines Limited, P.O. Box 18, Falcon Works, Loughborough, Leicestershire. Telephone Loughborough 63131 ext. 64.

To run a new PDP11/70 installation

These two Shift Leader appointments are undoubtedly among the most exciting and interesting around today. Our client is an internationally famous London based company with a £30 million turnover. Its growth in recent years has been impressive, to say the least, and now in order to keep pace with a rapidly expanding demand for its services, it has installed a brand new PDP11/70 computer running under RSTS/E with 17 on-line terminals in-house and four remote.

It is a fully documented and supported time-sharing system which also covers the company's integrated accounts, sales

records and archives. In our client's line of business it is a unique application and now with the system all set to go they require two young, enthusiastic and ambitious Operations Shift Leaders.

It is an ideal opportunity for men and women who are at present Chief or Senior Operators and are now looking for more responsibility and a new challenge.

PDP 1100 under RSTS is required and a grounding in BASIC + would also be desirable, but as an added attraction to the jobs, training in BASIC + programming will be given.

Salary will be negotiable up to £6000 per annum and our client is also offering membership of the pension scheme and staff restaurant facilities with a three-course meal for only 20p.

Phone or write to Andy Mogg for an application form, or send your c.v. to the address below.

Knight Computer Services Ltd.

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- If required we will set you up as a limited company. This gives you control of your tax payment and means you could pay much less.
- We will solve your administration headaches, your company set up, book-keeping, invoicing, accounts and tax returns will be done for you by professionals as a free service.
- Registration for VAT benefits you on all your outputs, we of course administer the accounts.
- As a limited company you can have a lease car arrangement (tax-free payments) which we will provide and organise with favourable terms.
- We can get you insured against long-term sickness and set up a pension plan.
- Long term service qualifies you for holiday payments.
- End of contract bonus schemes and retainer deals can be negotiated.

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Salary negotiable between £6k-£9½k + car, training, security and all company benefits.

Contact us (Louie, Kim or Tony) in Southend:

OR

A.M. TASK FORCE LTD.
2 Southchurch Road, Southend-on-Sea, Essex SS1 2NE
Telephone: Southend-on-Sea (0702) 615551/2

OUR REPUTATION TELLS ALL

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IBM	OS JCL WRITERS	£235 + pw	YORKS AND LANCAS
	PROG/ANALYSTS	£250 + pw	
ICL	PROGS, ANALYSTS & PROJ. LEADERS	£NEG pw	SOUTH WEST MIDLANDS
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HONEYWELL	VME/B SUPPORT	£NEG pw	UK & EUROPE
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UNIVAC	VME/B VERY GOOD OPS	£NEG pw	UK & EUROPE
	CORAL PROGS	£250 pw	
MINI	USERCODE PROGS	£240 pw	MIDLANDS WILTSHIRE
	2900 GH/GH + OME SUPPORT	£225 pw	
CONSULTANTS	2900 PROG/ANALYSTS	£250 + pw	WEST WEST
CONSULTANTS	PROGS COBOL & IOS	£275 pw	LONDON & OTHER AREAS
CONSULTANTS	1100 COBOL PROGS	£250 pw	WILTSHIRE
	PROG/ANALYSTS	£NEG pw	
CONSULTANTS	MULTI MACHINE DISCIPLINES	£275 + pw	SOUTH WEST NORTH & SOUTH

More contracts are imminent. Permanent positions with **TASK FORCE** will be considered for all requirements listed.

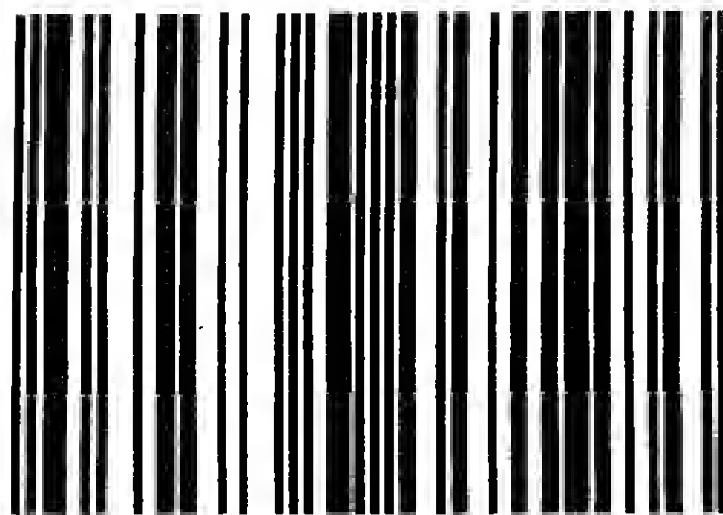
in our new Stoke Office (Jan, Paul or Derek)

A.M. TASK FORCE LTD.

44 Kingsway, Stoke-on-Trent, Staffs. ST4 1JH
Telephone: Stoke-on-Trent (0708) 410217/8

Handwritten signature: *John Mogg*

EXPONENTIAL GROWTH
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PROFITABILITY
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To cope with the demands of our Electronic Point of Sale Project (EPOS), we require Programmers at all levels. Ideally you will have a minimum of one year's IBM experience with COBOL or Assembler.

Salaries will be within the range £5,000 p.a. to £7,500 p.a. and fringe benefits are those that you would normally associate with a large Company.

We are based in Cheshunt, 35 minutes from the centre of London, and where necessary we will help with relocation expenses.

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OTHER REQUIREMENTS: If you have 18 months' minimum experience on the hardware CALL US NOW for more details of these and other assignments.

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VLI group

**TECHNICAL OFFICER
(COMPUTER APPLICATIONS)
Applied Physics Division**

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The successful candidate will join a team in the Mathematics Section whose work covers a range of research areas in addition to providing a mathematical service within CERL. He/she will work closely with Research Officers engaged on a number of problems for which numerical and computational solution plays a large and important role. In addition he/she will contribute to the mathematical and computational service provided by the Section.

Applicants should ideally possess an HNC or equivalent qualification and at least two years experience of computer programming. The duties of the post require ideally a good understanding of mathematics and numerical analysis, together with a knowledge of a range of computer languages and modern programming techniques.

The appointment will be made within a salary range of £4110 to £6035 (currently under review) plus a payment under a Self-Financing Productivity Scheme of between £10 and £15 per month.

The Laboratories are situated in a pleasant part of Surrey and offer attractive Conditions of Service, and facilities for the total of 800 Research and Support Staff engaged in a broad spectrum of research into the materials, technologies and plant performance problems of the Central Electricity Generating Board.

Application forms are obtainable from the Head of Personnel Development & Services, Central Electricity Research Laboratories, Kelvin Avenue, Leatherhead, Surrey KT22 7SE or telephone Leatherhead 74488 Ext. 383, quoting reference number RL/37/CW. Closing date is: Friday 3rd August, 1979.

CENTRAL ELECTRICITY RESEARCH LABORATORIES

**NATURAL ENVIRONMENT
RESEARCH
COUNCIL**

**NERC CENTRAL COMPUTING
GROUP**

**ASSISTANT
SCIENTIFIC
OFFICER**

The NERC Central Computing Group has a vacancy for an Assistant Scientific Officer to work at the Rutherford Laboratory, Chilton, near Didcot, Oxon. The post will involve providing general user support for the Univac computer. Specific responsibilities include support of existing major software systems, fault finding and job tracking when problems arise.

Minimum educational qualifications for appointment are 4 OCE O Level passes including English Language and a Scientific/Mathematical subject. Candidates should normally be under 26, years of age on 31st December, 1979. Salaries: £5,078 p.a. at age 18 rising to £3,980 p.a. at age 21 (£3,188 at age 22 rising to £3,618 p.a. at age 24) at 1 August, 1979. These scales will be revised in January, 1980.

Daily travel facilities are available from the Rutherford Laboratory to most of the neighbouring towns and villages. Residential and recreational facilities are provided.

Staff of the Council are not Civil Servants but enjoy pay and conditions of service comparable to Civil Servants.

Application forms may be obtained from Ken Young at NERC, Pointe House, North Star Avenue, Boreham (Tel. 0783-40101). Completed application forms should be returned by 10th August, 1979.

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**South Eastern
Health Board**

SENIOR PROGRAMMER—GRADE V

The health board's data processing is based on an I.C.L. 2903 48K computer located in Kilkenny City in the south east of Ireland.

The primary responsibilities of the job will be the supervision of the Board's programming activities and the training and development of the Board's programming staff.

The minimum requirement for the job is: At least two years experience in programming in Cobol using D.A., a sound knowledge of I.C.L. software and of modular programming would be desirable.

Starting salary is in the range of £5,284-£5,996 (under review) and the Board will assist with interview and removal expenses.

Special interview arrangements will be made for U.K. applicants.

Application forms and particulars are available from:

**The Personnel Officer,
Anus Slainne,
11 Patrick Street,
Kilkenny,
Ireland
Telephone (056) 21702.**

to whom completed application forms should be returned not later than 5.00 p.m. on Tuesday 31st July, 1979.

Outstanding New DP Opportunities at all levels

Rural South of England

Starting Salaries between £8k and £11k,
(plus CAR as appropriate)

Our client is a large computer services organisation with a significant complement of 4th and 5th generation equipment supporting the development of an extensive variety of real time and teleprocessing based application systems. Full use is made of distributed processing facilities with customers being offered mainframe, mini or micro computer solutions to a wide range of business problems.

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The appointments provide real opportunity to become versatile through all aspects of on-line mainframe and mini based business data processing, thus providing the successful candidates with an expanding future in tomorrow's DP.

Applicants should be educated to at least 'A' level standard, and possess a background of experience in either programming, analyst/programming, systems analysis, programming or systems team leading, project or systems supervision or management, in a 3rd generation DP environment.

Experience in some on-line, real time or telecommunications would be regarded as a bonus at the lower end of the salary range. For the senior appointments a minimum of three years systems analysis and design on a major system, plus around two years supervisory

experience is essential. Some appointments provide the opportunity for occasional travel in the UK and overseas. Where appropriate the client will provide adequate training, in house and in the field, to enable successful candidates to operate effectively in terms of personal performance and future career development.

Depending on the relevant depth of experience, starting salaries will be offered between £8k and £11k, coupled with a range of significant benefits, including a company car where appropriate, together with a realistic and compensating relocation package. Extensive new property developments in the locality are currently under way with prices ranging from £25,000 upwards. The nearby market town is fully developed with a full range of shopping, schools, and recreational facilities. For those seeking the occasional 'bright lights' London is 50 minutes away by train. A day at the sea presents no great problem and the rolling countryside is a step away from the front door.

TO APPLY
Please send a ONE PAGE, handwritten or typed, listing of name, address, age, marital status, home and office telephone numbers, current salary, and employer, employment history, including positions held, roles played, relevant responsibilities, and hardware and software systems exposure to date as relevant, to ANTHONY SPURR, Executive Selection Division, quoting reference number G743. Applications are invited from either sex and will be treated in the strictest confidence.

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York House, 199 Westminster Bridge Road
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Telephone: 01-633 0866



JBA

TECHNICAL SERVICES MANAGER

Middlesex/Surrey border £10,500+ car

The Development Centre of a leading U.S.A. Computer Manufacturer wish to recruit a senior technical manager to take over departmental responsibilities, reporting to the manager of the entire centre. The appointee will give direction to computer operations, product assurance, documentation and applied technology. Also, there is an increasing need for technical guidance to be offered to development teams in the areas of financial, banking and accounting products.

Applicants should already be at a 'Management' level ideally still involved with technical development, e.g. software engineering. A good business and/or commercial awareness is called for, as well as the attributes associated with management of people and large high budget projects.

PROJECT MANAGERS

£8000-£9000

The Centre also has vacancies for two Project Managers with Accounting or Financial experience, respectively. In both areas new development and advanced products are planned for this year and into the 1980's.

The managers will be responsible for the excellence of products, planning, and the execution of market introduction, together with management of subordinates.

Applicants should be senior analysts with a high degree of technical ability in accounting and/or financial areas, plus an awareness of hardware and software efficiency. Some background of benchmarking is a bonus. The positions offer a real opportunity to get involved with the management of people and accomplishment of product design.

Contact: Mike Creamer
JAMES BAKER ASSOCIATES,
International Personnel Consultants,
16 Maddox Street, London W1. Telephone: 01-491 4478

MANCHESTER: Computer professionals £4,500 to £9,500

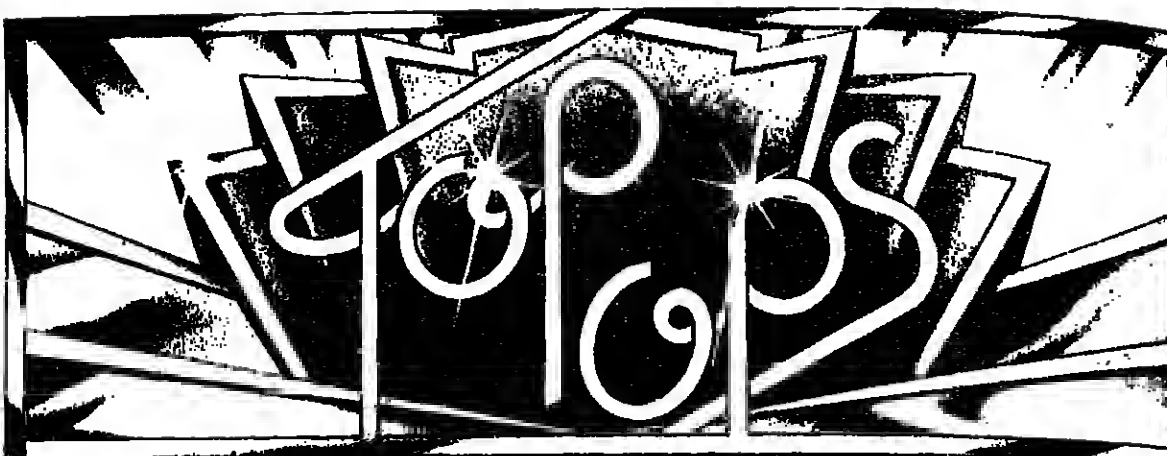
Systems Designers Limited formed its Manchester Branch in Autumn 1978 and due to a full order book, requires further computer professionals

Applications are currently in hand in the Communications, VMEdata, Scientific and Process Control fields

Staff are required at all levels for these interesting projects which use the latest mini and micro computers. If you have one to eight years' real-time experience and would enjoy the challenge of helping our branch grow at an even faster rate, please contact:



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Systems Designers Limited
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Sub Services Division of BOC Database Group and a member of Computing Services Association

01-491 4706 OR WHEN BUSY 01-439 3411

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The successful candidate will have at least 1-2 years' experience in COBOL programming or mini computers.

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Ring David Abbey for further details on 01-281 8016.

Computer education -a vital contribution to IBM's future...

Right now smaller computers are moving ahead more rapidly than ever before. With advancing technology, their cost has come down, bringing them within the financial reach of smaller and smaller businesses. And this in turn has led to a more competitive and more challenging industry. It is an area of huge potential on which a great part of IBM's future success depends.

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We're now looking for more energetic, articulate men and women to join our education team at present based at Rayners Lane, N.W.

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Right now, you should be a graduate, working in a data processing environment with at least 3 years' programming experience. Alternatively, you could already be involved in education as a teacher or lecturer in a school or university—or in a data processing related area. Either way, IBM's training will provide you with the expertise—technical or educational—to keep you abreast of the latest technological advances, and to contribute to the development of new training material.

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You would be responsible for operating a large ICL 2800 configuration under VME/8. There is substantial use of communications, including both TP and MAC, and IDMS is being introduced.

You should have had significant supervisory experience of major operating systems in a communications environment and about five years' operations experience in total. While 2800 and VME/8 knowledge is highly desirable, candidates with a background on other large mainframes will be considered and necessary training provided. (Ref. 998)

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We're not going to put a value on your contribution at this stage. Suffice it to say that we will pay whatever it takes to attract the sort of Software Lecturer our Programmers can rely on—and we'll back the salary with a full range of big company benefits.

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A GEC-Marconi Electronics Company

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Salary on scale £1,232-£8,462 per annum (under review) with appropriate pension.

Further particulars from: The Secretary, The University, Aberdeen, with whom applications (not copied) should be lodged by August 8th, 1979.

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DATA PROCESSING MANAGER

We are looking for a data processing professional to continue development of our systems to computerise the production of technical documentation and other systems, including coding, payroll and an interesting variety of ad-hoc projects.

The machine is an ICL 2803 which includes EOS 30 discs. The ideal applicant will have sound knowledge of ICL software and RPG2, plus the management skills necessary to control a department.

Please telephone Mr. P. J. G. Bamford on 01-287 5055 for an interview or write enclosing CV to:
OYTECHNIA LIMITED
Reedbank Road
Chesham, Bucks

Recruitment LOGISTIX in Informatics

Message Switching & Communications Central London

Salaries: £6.5—11K

Our International Client based in Central London is seeking to expand and establish new project teams working in the areas of Data Communications, Message Switching and Mini Software. Joining one of the new specialist project teams will give you the opportunity to enhance your career by learning new techniques and applications and you can be certain that you will be involved from the outset in new State-of-the-Art developments. Successful candidates, probably aged between 23 and 33, should be either graduates or have a very solid background in advanced computer applications. You are likely to be either a Systems Designer/Consultant Analyst/Programmer or a Programmer in a Mini Computer environment and have extensive Assembler experience. Any specialist expertise in the areas of Data Communications, Message Switching, Computer Networks, Process Control or Mini Computer software will be considered particularly advantageous. Interviews will be held throughout August at our Client's London Office. Ref: A 19/07

Systems Designers + Programmers City of London Institution

Salaries: £6.5K—£9K + Mortgage

A well-known and respected "Blue Chip" Banking and Assurance Institution established in the City and other European financial centres requires additional computing professionals up to Project Leader status for its systems development and hardware upgrade projects. Ideally Programmer candidates should offer 2 years continuous PL-1 or COBOL programming experience in an on-line environment. Of particular interest will be those who have current Teleprocessing (CICS, ENVIRON or SHADOW) or Database (IMS, TOTAL) involvement. The Company values highly its computing professionals and consequently you will become a member of a specialist project team working to strict documentation and programming standards. Our client offers a subsidised mortgage facility (after a brief qualifying period), personal loan scheme, private health and a non-contributory pension scheme. Ref: B19/07

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Salary: £15K (Tax Free)

A leading Scandinavian Systems and Turnkey Supplier with several European and U.S. offices requires Assembler Programmers for its recently opened Madrid operation. Whilst the applications under development are sophisticated Real-Time projects, previous experience of Real-Time is not absolutely essential but in-depth FORTRAN and ASSEMBLER programming expertise is a pre-requisite. Preference will be given to those candidates who have very recent or current experience on UNIVAC-118 or UNIVAC-490/1 series. Willingness to relocate to Spain for a minimum of one year is absolutely essential and to assist you in your relocation our client will meet all relocation expenses in addition to providing initial paid accommodation. Interviews will be held at our London Offices in early August. Ref: C19/07

Interdata Programmers West Germany

Salary: to £17K

An International client with a long track record of successful implementation of new systems for European Public Institutions and Government Agencies is seeking several INTERDATA orientated Programmers for a long standing German project. They now require additional personnel to cope with the installation of new hardware and extended applications areas. You will become a member of one of several specialist project teams in which you will make a valuable contribution whilst simultaneously expanding your own technological frontiers. We are specifically requested to recruit only FORTRAN and Assembler Programmers who are fully familiar with Interdata hardware. You should therefore offer two years or more programming experience on this machine. The applications areas in which you will be involved comprise mathematical modelling, testing, data communications and verification. On completion of the project you will be given every opportunity to relocate to one of the Company's other European offices. Ref: D19/07

ICL 2900 Thames Valley + Manchester

Salary: £6K—£10K

A prestigious client having its U.K. headquarters in a University City requires Programmers, Systems Analysts and Designers for early employment. Of particular interest will be very recent or current experience on ICL New Range hardware in both a Teleprocessing and Database environment. Those who have expertise in conversion from ICL 1900 to 2900 are also attractive. You are therefore invited to apply immediately if you can demonstrate in-depth VME/B or K, DME or IDMS experience. The Company offers a wide ranging portfolio of fringe benefits in addition to an excellent salary. Ref: E19/07

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Our clients, the market leaders in the rental field, offer excellent promotion opportunities to a Programmer, who can persuasively use his/her analytical and creative skills.

The ideal candidate will possess at least one year's programming experience in BASIC+ on a PDP 11 system.

The Programmer will accept programming assignments and prepare detailed flow-charts for each program and thereafter, test, debug and produce documentation in accordance with the company's standards. In addition the successful applicant will be required to prepare computer operating instructions, progress reports and also be involved in the training of user personnel.

Salaries are reviewed at 6-month intervals.

For further information and details of the excellent fringe benefits and prospects contact:

Lindsey Lee on 01-637 0781

or your local office of

ATA COMPUTER RECRUITMENT
230 Gt. Portland Street
LONDON W1N 5HG

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DATA CONTROL SHIFT SUPERVISOR

Tooting, S.W. 17.
From, £5,000

The South West Thames Regional Health Authority wish to appoint an additional Data Control Shift Supervisor to be based at the Regional Computer Centre, Springfield Hospital, Tooting, London SW17.

Computing, within the centre, is currently based on powerful ICL 1904S hardware, running under GEORGE III, which provides medical, financial and management information services to a region containing a population of some 3 million and over 150 hospitals.

The essential requirements for this position are at least two years Data Control experience, preferably in a supervisory role, plus a working knowledge of GEORGE III JCL. The successful candidate will work on a 2-shift basis and be responsible for the supervision of a 4-strong team. The salary quoted includes London Weighting and a 20% Shift Allowance.

For further details, phone Sylvia Lyons or Les King on 01-839 3351 up to 8.00pm each evening, or write, with comprehensive career details and telephone number, to: Modem Computer Services Limited, FREEPOST, London WC2N 2BR.

01-839 3351

MODEM

DATA PROCESSING STAFF CONSULTANTS

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Management &
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PRODUCT MANAGER DATA RECORDING MEDIA

£15,000 plus car

Our client is looking for an experienced Media Sales Executive capable of handling the marketing of an exciting new range of products to computer users. Duties will include product training of existing salesmen, liaison with the American manufacturer and setting up and support of OEM outlets.

To the Sales Executive who wishes to move into management, with unlimited career progression, with a rapidly expanding organisation, this is an ideal opportunity.

Remuneration is in the form of c £8,000 basic salary, with bonus and commission to around £15,000 on quote, plus an executive company car and numerous other benefits. In addition a guarantee is negotiable according to present income and experience.

Please apply to London office for immediate interview quoting Ref. DF2/79.



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72-75 Marylebone High Street
London W1M 4AJ.
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20 Upper Fitzwilliam Street, Dublin 2
Telephone 0001 7663 87.
0001 7665 43.

INSIGHT MARKETING & PERSONNEL CONSULTANTS LTD.
72-75 MARYLEBONE HIGH STREET LONDON W1M 4AJ.

INTERNATIONAL MARKETING (MIDDLESEX)

My client is an American-owned multi-national with diverse product interests and highly skilled management. Throughout the world sales are made through a tightly controlled distributor network, and consequently the Headquarters operation is a highly efficient, low overhead function, comprising a small and highly proficient team.

The operation is truly international, having responsibility for all markets, apart from the U.S.A. As a result, candidates for all jobs

must be willing to travel and be prepared to spend around 30 days a year out of the U.K. principally in Europe and U.S.A.

All the positions are based in West Middlesex and carry a company car. Other benefits include membership of B.U.P.A. and a good pension and Life Assurance Scheme (contributory).

Enquiries and applications to: A. P. BAKER, 01-499 4501 or write to me at the address given below.

SYSTEMS ENGINEER - SOFTWARE

From £8,000 + Car

THE TASK:

To support the distributors in their selling and installation work, with particular emphasis on early implementations of new products, and to generally provide a project management capability with reference to software products.

YOUR BACKGROUND:

Several years practical experience at the "sharp-end" with a vendor and sound knowledge of IBM communications software and operating systems.

Ref: RW29/1

PRODUCT SPECIALIST-WORD PROCESSING

£7,500 + Car

THE TASK:

To provide product support to the distributor network. For hardware, to organise training down to chip level. For software, to provide operational feedback. General pre- and post-sales activity, and support of early installations.

YOUR BACKGROUND:

Broadly based practical experience in both pre-sales and post-sales roles.

Ref: RW29/3

SYSTEMS ENGINEER - HARDWARE

£7,500 + Car

THE TASK:

To successfully introduce selected new products to the distributor network, including product familiarisation, distributor training and machine performance evaluation.

YOUR BACKGROUND:

Educated to degree or H.N.D. Level, and practical experience in design or a senior Field Service role or Product Support.

Ref: RW29/2

PRODUCT SPECIALIST - PORTABLE DATA ENTRY TERMINALS

£7,500 + Car

THE TASK:

To provide pre-sales and post-sales support to the distributors with particular reference to the overall systems approach. To assist in new product specifications.

YOUR BACKGROUND:

Knowledge of — and preferably practical experience in — Data Communications and Mini-Computers. An interest in Micro-processor technology and a broadly based systems background.

Ref: RW29/4

hutchinson-scoggins recruitment
47/48 New Bond Street (entrance in Maddox Street)
London W1Y 0HE Telephone 01-499 4501

Systems Designers Limited is a British Computer Systems Consultancy which, during the 10 years it has provided the industry with professional support, has established the highest expertise and credibility in the field of mini and micro based systems. During this 10-year period, the company has grown to 200 professional staff in strength and retained its independence and its informal, though efficient, way of working. The company is still growing, enjoying expansion through a wide variety of work carried out in the U.K., Europe and the USA.

Currently we require Consultants, Engineers and Programmers with software and systems knowledge to help us solve the theoretical and practical problems of this high technology industry, mainly in the areas of:

COMMUNICATIONS Military communications procedures; voice, data and message network design, network management systems; message switching, telex and packet switching systems; computer communications protocols.

INDUSTRIAL Process control and monitoring, plant control simulation, high speed data analysis and distributed microprocessor system.

MILITARY Modelling, avionics and radar systems, complex tige, simulators, microprocessor missile systems and signal processing.

SOFTWARE PRODUCTS CONTEXT software development systems, Ada Compiler design, MASCOOT implementation, Information retrieval systems.

VIEWDATA International Viewdata Centre, X25 packet switch links to external databases, New Viewdata products for USA and Europe.

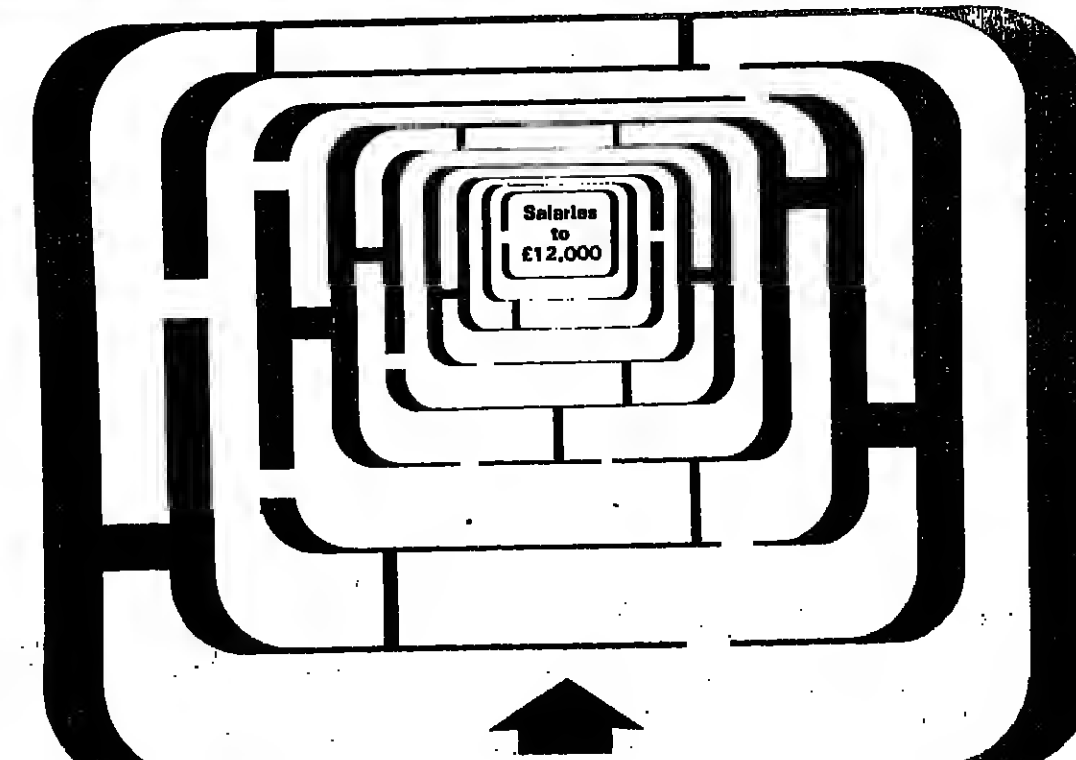
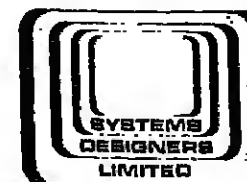
CONSULTANCY Project Management, software and systems development technology, complex military systems and theoretical studies.

So, if you have a good academic background, at least one year software experience and are equal to the challenge, we will be very pleased to hear from you.

The company runs productivity bonus, insurance and pension schemes and also offers relocation assistance.

Telephone Ann Gregory for an application form and further information about the company or write to:

Bill Hockey, Operations Director
Systems Designers Limited
1 Pembroke Broadway, Camberley, Surrey GU15 3XH.
Telephone Camberley (0275) 52244.



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Oil industry consulting

Logica

Logica's Middle East Operation is seeking people to work on the planning and development of advanced data acquisition and control systems for Middle Eastern oil companies.

■ You should have a relevant degree and 8 years experience, of which half should be in industrial systems

■ You should have experience of system design using mini and micro computers and a knowledge of telemetry techniques

■ You should be familiar with aspects of oil or gas production and distribution

■ These posts involve travel to the Middle East on a variety of short and long term assignments assisting clients with various aspects of system design and implementation

■ The projects are challenging in terms of scale and exciting in their use of advanced technology

■ Your career record will be expected to justify a basic salary of at least £10,000 p.a., plus an attractive remuneration package for overseas assignments.

These are career positions with excellent prospects for advancement within Logica, the pre-eminent professional services company specialising in the fields of computing, communications and management science.

For further information please call Julia Roth on 01-637 9111 or write for an application form, Ref MEO/9 to:

Logica Limited,
FREEPOST 21,
London W1A 4JZ.

MYRIAD

SYSTEMS MANAGER

LONDON

TO £11000

Our client is a large independent public company and market leader in their field. Major investment in D.P. has recently been made to cope with ambitious growth plans for the future. A stimulating and challenging opportunity now exists for a Systems Manager who will play a major role in the expansion of computing facilities offered to associate companies within the group.

The Systems Manager will manage a competent team of Analysts and Programmers involved in the development of a variety of interesting applications. Implementing systems on a project oriented basis the position will entail a high degree of user contact and could involve a limited amount of travelling throughout Europe. In addition to current development activities the person appointed will join the departmental management team and be required to keep abreast of the latest hardware and software innovations in order to effectively contribute with long term strategic plans to ensure the groups market lead is secured well into the late 1980's.

Applicants should be able to demonstrate a progressive and successful record of systems implementation and be familiar with sophisticated project estimating and control techniques. Ideally offering experience of on-line systems development, candidates should have the ability to manage an energetic and dynamic team in a highly user oriented organisation. Preferably aged 30 to 35 with a degree or professional qualification applications from candidates with experience of financial systems or distributed processing would be particularly relevant.

Located at their computer centre in South-West London from which operations throughout the UK are controlled, the company offers a challenging and progressive future with potential expansion to subsidiary companies throughout Europe. In addition to first-class conditions of employment a salary in the region of £11,000 p.a. will be offered. Generous re-location expenses are available where appropriate.

MYRIAD APPOINTMENTS LIMITED
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01-353 0981 24 HRS.

Ref. E1/1907

£10k+Appointments £10k+



Jacquard Systems Mini-Computer Marketing in Europe

c. £12,000 + Car + Bonus

An unusual opportunity has arisen for a professional computer person to join a fast growing mini-computer company in a senior marketing position based west of London. The company manufactures advanced micro-processor based automated office systems which operates data processing, word processing and communications simultaneously with equal facility. An extensive network of distributors has been set up throughout the world and the prime responsibility of this new appointment is to assist in appointing and supporting additional distributors in the U.K. and Continental Europe.

Extensive travel throughout Europe will be involved. The position will appeal to a technically competent energetic computer marketing person already employed in a computer or consultancy organisation elsewhere.

Experience in all aspects of marketing and installing mini-computers is required and it is likely that the

successful candidate will have worked in the computer industry for at least 5 years. Knowledge of another European language, preferably French, would be an advantage, likely age range is 28-35 and education to degree level is required.

Salary is negotiable c. £12,000. The total remuneration package includes a motor car, generous pension scheme, free health insurance and other usual benefits. A bonus scheme is also operated.

In the first instance, please send your c.v. to, or request an application form from, Ron Burgess quoting reference RB/CW/2361.

Jean Dennington Limited
Personnel Consultants,
14 New Burlington Street,
London W1X 1FF.
Tel: 01-734 6134.

CUSTOMER ENGINEERS

Overseas Computer Assignments

Remuneration package in excess of £12,000 - base salaries tax free

Our client, one of the world's leading computer companies, has a number of opportunities abroad for Customer Engineers who wish to broaden their knowledge.

2-3 years experience of Unix, HP or Univac 90 series equipment and essential requirement.

The assignments, offering a variety of locations, are for 1-2 year periods.

Generous benefits include:-

- * cost of living allowance
- * accommodation allowance
- * educational allowance for children of school age
- * regular home leave for entire family

Applicants must be sufficiently mature, confident and flexible to enable them to function in a variety of working environments, and also to be willing to readily adapt to different life styles.

Three posts are now available and initial applications should be made immediately. Please write with full details (both cover and resume) to H. S. Croft at the address below or telephone 01-379 7383 for an application form.

Please inform us of any companies to whom you do not wish to have your application forwarded.

Gordon Procter & Partners
RECRUITMENT ADVERTISING DIVISION
175 VICTORIA AVENUE, LONDON W1

German Software Company in DUSSELDORF is looking for several experienced

APPLICATION PROGRAMMERS

to be responsible for developing online standard software packages in the field of Manufacturing Control. We are operating on Texas Instruments Systems.

The successful applicants should have the following qualifications:

- education to degree standards either in commercial or technical subjects
- at least three years' experience in COBOL
- practical experience of realtime and/or online mini computers
- basic knowledge of German is essential

The positions will be rewarded with:

- salaries up to £12,000 p.a.
- life assurance scheme
- 5 weeks' annual paid holidays
- help will also be provided in finding suitable accommodation

Applicants should please send a detailed career history to:
S. Cavlak, Gerhart-Hauptmann Str. 34, 4006 Erkath 1, Germany

So you know all about Systems Software

How about Computer Systems to Design Systems Software?

The brief for this job is to assist in the design and implementation of a methodology for the controlled evolution and maintenance of systems software.

The hardware centres on a major family of mainframe computers together with new systems currently under development. The location - Southern Germany.

We are looking for:-

Systems Designers

With at least three years relevant experience to work on the development of technical procedures for a system of computer aided design to be used on operating systems software.

Senior Programmers

With several years' experience of programming as part of a major project team. The job will be of particular interest to programmers with an interest in the development of systems software.

The main qualifications we require are experience and innovative ability.

The company - an international organisation based in Germany with a first class record in the business world and a reputation for using the skills and talents of their people with imagination and with commonsense.

Background - the people we require will have extensive experience of at least two of these languages - PLI, Cobol, Assembler, SPL.

To make a contribution to this project you will need a clear understanding of how systems software is developed at present and more to the point, how it should be developed in the future.

In return we can give you the satisfaction of working on the project which will produce the industry standard for systems software development in the '80's.

Extremely attractive salaries are being offered for these positions together with the usual benefits associated with a large international organisation.

The Country - Living in southern Germany can be a reward in itself. The cities offer an enjoyable way of life and the countryside is beautiful and unspoilt.

If you are interested in applying for a position working on this project please write in the first instance giving details of career to date and qualifications to:-

Altmann & Partner GmbH

at either -
21, Mount Ephraim Rd., or Weissenportz,
Tunbridge Wells, Kent 5203 Much, West Germany
0892-25702 010-49-2245-2824
Interviews will be arranged in London

RPG II PROGRAMMER

(TRAIN TO ANALYST/PROGRAMMER)

VICTORIA SW1 to £6,500

A minimum of ONE YEAR'S RPG II experience could be your passport to SYSTEMS ANALYSIS training on this IBM System 34, which has Real-Time architecture and currently supports eight local terminals with a Remote terminal coming on-stream next month.

Our clients are internationally known and market leaders in their field. Current and future work includes both On-Line and Batch systems.

Conditions of Employment include Non-Contributory Pension, a Realistic Bonus, Staff Discounts on Group Products, Free BUPA and LVs.

TELEPHONE: 01-839 6087
PETER BARSON, Ref: 111

BARSON, TAYLOR & WARD
Computer Personnel Consultants
107 Jermyn Street, London, SW1

TAYLOR & WARD

PROGRAMMERS- join us for a key career Middlesex

AGB is already Europe's largest Market Research organisation. With the launching of INDEX in 1978, monitoring personal discretionary expenditure and financial holdings, and our expanding range of research into consumer packaged goods, consumer durables and television audience measurement, we are set to substantially increase our £20m turnover.

A strong talented team of computer personnel are essential for the effective running of the computer dept, which houses IBM, Honeywell and PDP computers.

Due to this growth, we need to increase the size of our professional programming team. Candidates should have at least 3 years' on-line programming experience plus a basic knowledge of systems design.

We offer a basic salary of c. £5,500 p.a. and an attractive benefits package that includes relocation expenses, where appropriate.

To find out more please contact:

AGB

Chris Toome, Director of Computing,
Audits of Great Britain Ltd, Audit House,
Field End Road, Eastcote, Ruislip, Middx. Tel: 01-429 1333.

SCIENCE RESEARCH COUNCIL COMPUTER PROGRAMMERS FOR SPACE RESEARCH

The APPLETON LABORATORY has vacancies for COMPUTER PROGRAMMERS to support several major Space Science projects one of which is the Infrared Astronomy Satellite (IRAS), due to be launched in August, 1981. The Science Research Council has the responsibility for providing the satellite control centre and a data analysis centre for this project, which is a collaborative venture with the United States and the Netherlands and staff are required to join a team of programmers who are currently preparing the software to be used for processing data from the satellite. The main computers will be PDP 11s, a GEC 4070 and an ICL 2980 and the Programmers will work in the following areas:

Large-scale data base handling;
Orbit and attitude analysis;
Real-time systems software;
Image processing.

Posts will be available at both Scientific Officer and Higher Scientific Officer levels. Applicants should have a degree, HND, HNC or equivalent qualification in Science, Mathematics or Computer Science, with at least two years' programming experience for the higher posts.

The posts will initially be located at Olton Park, Slough, but will be transferred later to Chilton, Oxfordshire.

Salary will be on the following scale, the exact step depending on qualifications and experience: £5,002-£6,488 for an HSO or £3,584-£5,380 for an SO. Outer London Weighting Allowance included.

Non-contributory pension scheme.

Please request an application form from:

Miss J. T. Varlet
Science Research Council
Appleton Laboratory, Olton Park,
Slough SL3 9JX
Telephone: Slough 44234, Ext. 183

Closing date: 9th August, 1979.

**BLACKWOOD ASSOCIATES**

GP House, 155 Hamstead Road, Handsworth
Birmingham B20 2RL
Telephone: 021-523 4520 (24 Hours) or 021-551 2357

ICL 2956/10 WEST BROMWICH

NEW MACHINE — NO CONVERSION**NEW PROJECTS — ON-LINE
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★ SENIOR PROGRAMMER ★ Around £6,000

To control and schedule programming section

★ PROGRAMMER ★ Around £5,500

To write new, and enhancements to existing, Cobol programs

★ SYSTEMS ANALYST ★ Around £6,000

To develop and specify a range of new systems.

Our Client, part of a major manufacturing group, requires applications from candidates who believe they have the necessary ability and determination to succeed in this new and challenging environment. A new ICL 2956/10 has recently been installed for which considerable development work is planned and a range of on-line systems is to be implemented to meet company requirements.

TO LEARN MORE ABOUT THESE GREAT OPPORTUNITIES CONTACT PETER BOWDEN IMMEDIATELY JOBS REF. 5/317, 5/318 and 5/319



For further details and an application form
phone or write to:

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NORTH WEST VACANCIES

PRESTON c. £6400 + Bonus + Benefits
SENIOR ANALYSTS
Major UK organisation requires professional Senior Analysts with over 3 years commercial/manufacturing experience. Excellent prospects and benefits.

NORTH MANCHESTER to £5300
COBOL PROGRAMMERS
Our client requires ICL COBOL Programmers with over 3 years experience to join on-line development team.

LIVERPOOL c. £6000 + Benefits
COBOL PROGRAMMER
A COBOL Programmer with 3 to 4 years commercial experience and some knowledge of either NCR 8000 or TI 9090 Hardware can enjoy an outstanding working environment with a major OP organisation.

MERSEYSIDE to £6400 + Benefits
SYSTEMS ANALYSTS
Our client requires mature Analysts for major development utilising the latest OP techniques. Very good benefits and bonus available.

NORTH CHESHIRE to £5700
COBOL PROGRAMMER
Multi-site DP user requires an ICL COBOL Programmer with a wide range of development experience. Opportunity to join a fast moving development team.

LIVERPOOL to £6250
SYSTEMS ANALYST
Our client is seeking Analysts with a sound commercial background. Hardware will be shortly upgraded to allow use of latest systems.

BURY c. £5000
COBOL PROGRAMMERS
Large machine user requires young, well educated COBOL Programmers with either ICL or IBM experience to support on-line applications. 1 to 2 years good COBOL background required.

NORTH MANCHESTER £6000
SENIOR PROGRAMMER
Our client is seeking a Senior Programmer with solid COBOL and supervisory experience on ICL 1900/2900 hardware to become Programming Team Leader.

MERSEYSIDE £5200 + Benefits
RPG II ANALYST/PROGRAMMER
IBM System 3 user requires an Analyst/Programmer able to work on own initiative and see systems through to completion. Benefits and prospects excellent.

MANCHESTER c. £6500
CORAL/RTL II
To cover business expansion our client is seeking Analysts and Programmers with CORAL 86 or RTL II experience. Knowledge of mini assembler in a process control environment is desirable. 2 years + experience required.

PRESTON c. £7000
PROJECT LEADER
Large OP user is seeking a Project Leader or Senior Analyst with in-depth systems experience, together with a background in programming. Development work is highly sophisticated.

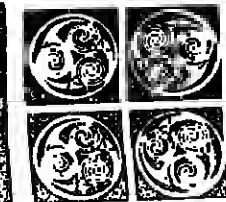
PRESTON to £4900 + Bonus
COBOL PROGRAMMERS
Our client is seeking young IBM COBOL Programmers to supplement development teams. Excellent prospects and Bonus scheme.

Phone STEVE SYKES on LEEDS (0532) 444185 (day) reverse charges if necessary or on LEEDS 662417 (evenings and weekends) for more details on these, or any other positions in the North West. Or write with brief details (no stamp required) to Lorian Computer Services, Ltd., FREEPOST, Leeds LS7 3YY.

LORIEN COMPUTER SERVICES Recruitment Consultants

OCS House,
Servia Road, Leeds LS7 1NJ
Telephone 0532 444185

* 24 hour Ansaphone service

**JBA****Systems Consultants**

London
Computer Sciences Company is part of the world's largest independent software and systems house. The organisation is planning to greatly increase its activities in the UK business and commercial systems market. As a result several opportunities for experienced senior analysts and designers have been created, with a special emphasis on knowledge of C.P. database, network planning and communications.

A wide range of projects is to be undertaken, so the opportunity for varied and interesting development at the forefront of technology is assured. We are interested in talking to any senior applicants who want to know more.

Contact: Andy Wright

Real-time Communications

Richmond & Europe
Rand Information Systems Ltd, a highly profitable systems house have taken a recent decision to expand their communications systems software business. They are currently carrying out a specific feasibility and design study on behalf of an international company for a large communications network. The initial positions being created for this and other projects are:

- * TECHNICAL CONSULTANTS - with upwards of 6 years software design and implementation experience.
- * SPECIALIST PROGRAMMER/ANALYSTS - with between 3-5 years, preferably real-time software design experience.
- * PROGRAMMERS - preferably Graduates, with around 18 months experience in this field.

Above average salaries are offered, in a generous remuneration package which includes free-life assurance, BUPA and non-contributory pension.

Contact: Andy Wright

Design Engineers

City Based
Opportunities exist for graduate design engineers to join a small team of specialists, working on the development of telex message switching systems, using both micro and mini computers. Candidates should be familiar with TTL logic design related to computers, and ideally have had some exposure to ASSEMBLER, data communication techniques and microprocessors. This is an excellent opportunity to work on new technology projects.

Contact: Margaret Stevens

For further information on any of the above vacancies, please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants
16 Maddox Street, London W.1. Tel: 01-491 4478

NEW MIDLANDS VACANCIES

LEICESTERSHIRE to £8000
PROJECT MANAGER
Project Manager required to work in a large manufacturing organisation. Must have sound experience at ICL range of equipment. This post will need a computer professional who will be equally happy in support management, pre-sales, and hardware and software implementation.

BIRMINGHAM to £7600
PROGRAMMERS
COBOL Programmers with 2 to 3 years experience required for an ICL 1902T installation. Knowledge of ICL 1900 George II, and/or Driver an advantage. Subsidised restaurant and good sports and social club.

BIRMINGHAM c. £7500
SYSTEMS & PROGRAMMING MANAGER
Senior computer professional needed to head up a systems and programming department. Must have experience in COBOL, ICL 2903/4 using JCL, and commercial applications. Retail knowledge an advantage.

BIRMINGHAM to £10000 + Car
BUREAU SALES
Computer manufacturer requires a sales person to sell services and hardware. You will have a sound knowledge of mini and/or accounting machine hardware and a good sales record. An excellent opportunity for a dynamic person to work in an existing territory.

BIRMINGHAM to £6300
SYSTEMS DESIGNERS
Systems designers with minimum of 3 years programming experience, or recently trained systems analysts required to work in a manufacturing environment. Must have a good secondary education background. Benefits include flexitime.

BIRMINGHAM to £6200 + Bonus
FORTRAN PROGRAMMERS
Experienced FORTRAN Programmers are required to work on commercial applications. Excellent Productivity Bonus in operation.

COVENTRY c. £5500
PROGRAMMER
This company requires a COBOL Programmer with 2 1/2 years experience preferably on ICL 1900 range for general applications.

BIRMINGHAM c. £5500
ANALYST/PROGRAMMER
Self motivated all round computer person with good experience of COBOL or ICL 2903/4 under JCL. Knowledge of commercial systems an advantage.

BIRMINGHAM to £5500
ANALYST/PROGRAMMER
Experienced Analyst Programmer with RPG II, COBOL and/or on-line experience an advantage. Must be able to communicate effectively with management of all levels.

BIRMINGHAM to £5300
SYSTEMS ANALYST
Systems analyst with 1 years experience required by a large financial organisation. Programming and/or on-line and/or ICL knowledge an advantage. Free lunches available.

BIRMINGHAM to £6200 + Bonus
PROGRAMMERS/SENIOR PROGRAMMERS
Experienced COBOL Programmers and Senior Programmers required for Univac installation. Univac 1100 experience and/or mini experience an advantage.

MIDLANDS £ good
ALL LEVELS
The above vacancies are just a few of those available now. If you are looking for a new position then contact us when we can discuss your requirements and find an appropriate job for you quickly.

Phone PETER GILBERT on LEEDS (0532) 444185 (daytime) or on (0274) 834074 (evenings and weekends) for these or any other MIDLANDS vacancy you may require. Alternatively write with brief details (no stamp required) to Lorian Computer Services, FREEPOST, Leeds LS7 3YY.

HOLLAND

Consultants Approx. £20,000
A leading UK systems software house wishes to strengthen its highly successful operation in The Netherlands by the appointment of five senior consultants.

The requirement is for people of consultant calibre, capable of leading large projects and/or designing complex real-time systems. Substantial user contact is necessary and experience of the process industries will be an advantage.

Those appointed will be expected to become resident in Holland for a period of at least one year, but will be employed by the UK parent company. The total salary package whilst abroad will be accompanied by large company benefits.

Contact: Mike Cramer

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Contact: Margaret Stevens

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Post 2

Leading
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Inclusive salary range
£5220-£6389 p.a.*

Candidates should be experienced Operators or Senior Operators with at least 3 years' experience on large IBM mainframe equipment using OS/VS1 or MVS. Knowledge of JCL and IBM utilities is essential and some experience of large L.P. environments is essential.

Post 3

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Inclusive salary range
£4625-£5115 p.a.*

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(Ref CW/79038)

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For consideration for these positions applicants should have three to four years in data processing including considerable experience programming in COBOL. Some systems design experience is also essential and the chances for greater involvement in systems analysis are excellent for suitable candidates.

(Ref CW/79039)

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The minimum requirement for these vacancies is about 12 months COBOL experience, through to 3 or more years for senior positions which would involve some supervisory and team leading responsibilities. For the more senior positions previous IBM experience is required, preferably in a CICS installation.

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Our client requires COBOL Programmers with an ICL background to work on installation of new equipment. Applications Commercial Ref. 1197.

COBOL Programmers with a financial background required to work in new installation. Subsidised mortgage. Ref. 1139.

Our client requires programmers and programmer analyst with COBOL or CORAL experience to develop On-Line Systems. Ref. 1109.

House purchase scheme among benefits offered to experienced COBOL or Assembler Programmers On-Line developments. Ref. 1023.

Knowledge of IMS and MVS required with approx. 2 years' experience. Some experience of customer contact and preparation of specifications preferred. Ref. 1189.

Non-contributory pension scheme/frees life assurance etc. Systems Analysts required On-Line. Thorough experience an advantage. Ref. 1204.

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Abbot GmbH are the European distribution centre of one of the largest multi-national companies in the health care industry. Our products are outstanding and they have been the basis of our rapid growth over the past few years. We are currently leasing an IBM 3/15 B disk-tape and planning to introduce a new on-line system over the next 2-3 years, and it is this expansion that has created two new posts within the MIS area.

Systems Analyst

This post reports directly to the Controller, and will suit someone with 3-5 years experience in systems analysis. Good business background and a strong personality are other requirements.

Programmer

Reporting to the EDP Manager the person appointed will have 2-5 years experience in RPG II and should have business experience.

A knowledge of the German language would be an advantage, although not essential. Long term career prospects within Germany are envisaged.

Salaries and benefits are competitive on the German market and relocation expenses will be paid.

Please reply giving comprehensive career details to: P. Bucklow, c/o Abbot GmbH, Diagnostics Division, Amperstrasse 3-5, 6070 Langen, West Germany. Or, for more information please contact Mr. Hans Berger, Tel. 01049 6103 701253.

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Screening interviews will be held by us in London, Birmingham, Manchester and Leeds. Our US Clients will interview and select the project team on various dates between 26 July and mid-August. Assignments within the project team are for varying periods, 6 months, 12 months, 18 months or 24 months. Approximately half the team are required in September, the remainder later in the autumn. All individuals selected will have permanent employment status on our consulting staff.

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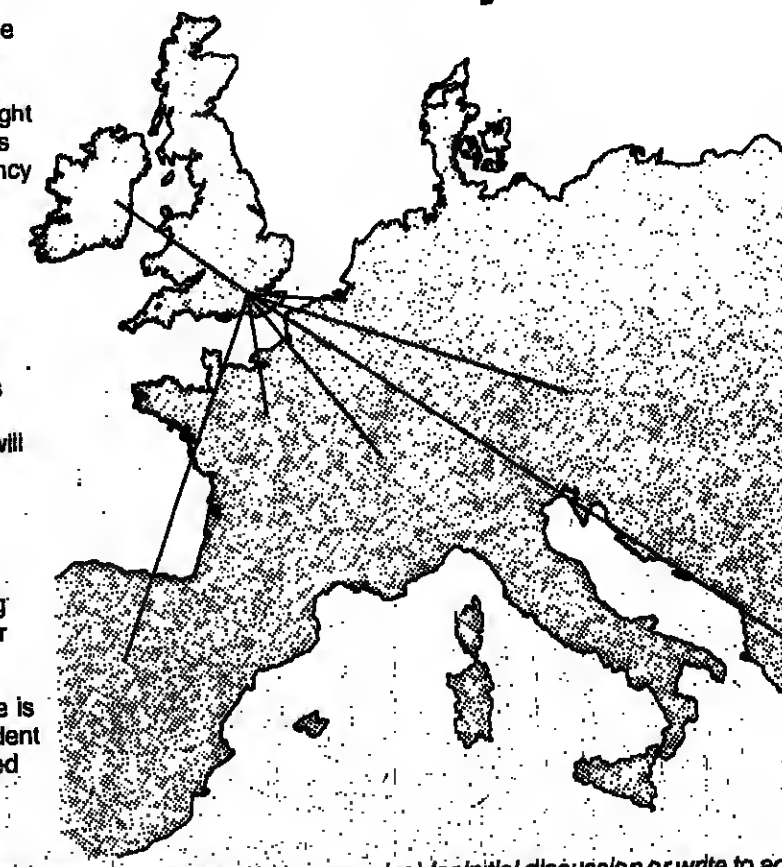
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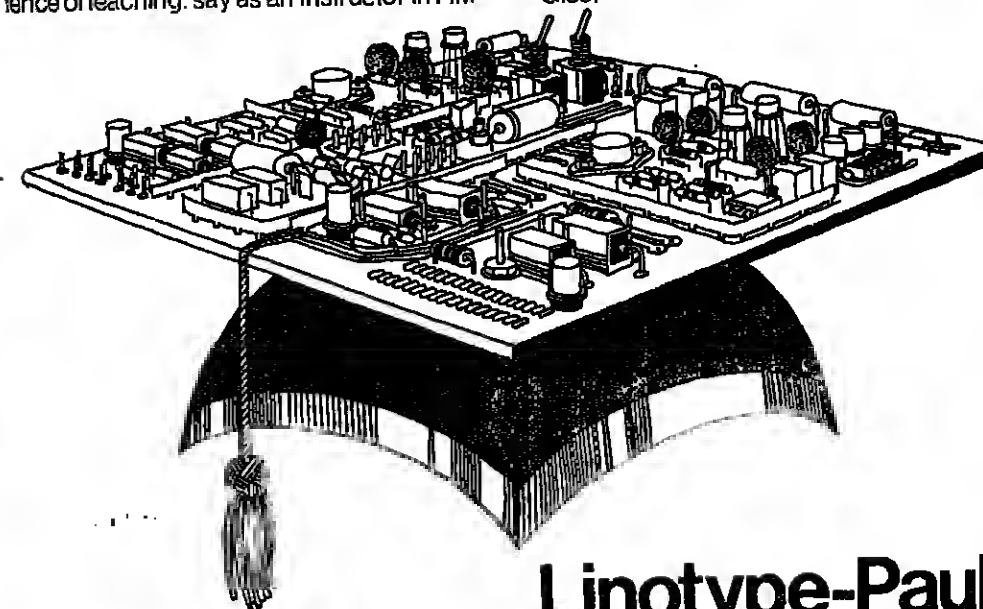
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